

A Key to Some Larvae of Chironomidae (Diptera) From the Mackenzie and Porcupine River Watersheds

D.R. Oliver, D. McClymont¹ and M.E. Roussel

Western Region
Fisheries and Marine Service
Department of Fisheries and the Environment
Winnipeg, Manitoba R3T 2N6

August 1978

**Fisheries & Marine Service
Technical Report No. 791**

Fisheries and Marine Service

Technical Reports

These reports contain scientific and technical information that represents an important contribution to existing knowledge but which for some reason may not be appropriate for primary scientific (i.e. *Journal*) publication. Technical Reports are directed primarily towards a world wide audience and have an international distribution. No restriction is placed on subject matter and the series reflects the broad interests and policies of the Fisheries and Marine Service, namely, fisheries management, technology and development, ocean sciences and aquatic environments relevant to Canada.

Technical Reports may be cited as full publications. The correct citation appears above the abstract of each report. Each report will be abstracted in *Aquatic Sciences and Fisheries Abstracts* and will be indexed annually in the Service's index to scientific and technical publications.

Numbers 1-456 in this series were issued as Technical Reports of the Fisheries Research Board of Canada. Numbers 457-714 were issued as Department of the Environment, Fisheries and Marine Service, Research and Development Directorate Technical Reports. The series name was changed with report number 715.

Details on the availability of Technical Reports in hard copy may be obtained from the issuing establishment indicated on the front cover.

Service des pêches et des sciences de la mer

Rapports techniques

Ces rapports contiennent des renseignements scientifiques et techniques qui constituent une contribution importante aux connaissances actuelles mais qui, pour une raison ou pour une autre, ne semblent pas appropriés pour la publication dans un journal scientifique. Il n'y a aucune restriction quant au sujet, de fait, la série reflète la vaste gamme des intérêts et des politiques du Service des pêches et de la mer, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les Rapports techniques peuvent être considérés comme des publications complètes. Le titre exact paraîtra au haut du résumé de chaque rapport, qui sera publié dans la revue *Aquatic Sciences and Fisheries Abstracts* et qui figurera dans l'index annuel des publications scientifiques et techniques du Service.

Les numéros 1-456 de cette série ont été publiés à titre de Rapports techniques de l'Office des recherches sur les pêcheries du Canada. Les numéros 457-700, à titre de Rapports techniques de la Direction générale de la recherche et du développement, Service des pêches et de la mer, ministère de l'Environnement. Le nom de la série a été modifié à partir du numéro 701.

La page couverture porte le nom de l'établissement auteur où l'on peut se procurer les rapports sous couverture cartonnée.

Fisheries and Marine Service

Technical Report 791

August 1978

A KEY TO SOME LARVAE OF CHIRONOMIDAE (DIPTERA)
FROM THE MACKENZIE AND PORCUPINE RIVER WATERSHEDS

by

D. R. Oliver, D. McClymont¹ and M. E. Roussel

Biosystematics Research Institute

Research Branch

Agriculture Canada

Ottawa, Ontario K1A 0C6

¹ Present address: Research Division, Foods Directorate,
Health Protection Branch, Health and
Welfare Canada, Ottawa, Ontario.

This is the 113th Technical Report
from the Western Region, Winnipeg

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT/RESUME	iv
INTRODUCTION	1
KEY TO SUBFAMILIES OF LARVAL CHIRONOMIDAE	2
KEY TO LARVAL TANYPODINAE	3
KEY TO LARVAL PODONOMINAE	4
KEY TO LARVAL CHIRONOMINAE	5
Chironomini	5
Tanytarsini	11
KEY TO LARVAL ORTHOCLADIINAE	13
KEY TO LARVAL DIAMESINAE	20
ACKNOWLEDGMENTS	21
REFERENCES	21
LIST OF FIGURES	23
FIGURES	25

LIST OF APPENDICES

<u>Appendix</u>		<u>Page</u>
1	Notes on some species in this report	64
2	Comparison of names used by Wiens et al. (1975) with those in present work	68

ABSTRACT

Oliver, D.R., D. McClymont, and M.E. Roussel. 1978. A key to some larvae of Chironomidae (Diptera) from the Mackenzie and Porcupine River watersheds. Can. Fish. Mar. Serv. Tech. Rep. 791: iv + 73 p.

Chironomid larvae were collected and identified from the Fort Simpson and Mackenzie Delta areas, Northwest Territories, and the Old Crow area, northern Yukon Territory. Illustrated keys based on these larvae are presented with brief notes on some of the species. Approximately 140 taxa in 75 genera and six subfamilies are keyed. Most of the taxa keyed inhabit medium- to large-sized rivers.

Key words: identification keys; larval chironomidae; Northwest Territories; Yukon.

RESUME

Oliver, D.R., D. McClymont, and M.E. Roussel. 1978. A key to some larvae of Chironomidae (Diptera) from the Mackenzie and Porcupine River watersheds. Can. Fish. Mar. Serv. Tech. Rep. 791: iv + 73 p.

Des larves de chironomidés ont été recueillies dans les régions de Fort Simpson et du Mackenzie Delta, Territoires du Nord-Ouest et celles d'Old Crow, nord du Yukon. Les clés illustrées de ces larves sont présentées ainsi que de brèves notes sur certaines des espèces. Les clés portent sur environ 140 de ces dernières, réparties en 75 genres et six sous-familles. La plupart des taxa classifiés vivent dans des cours d'eau moyens ou importants.

Mots clés: clés d'identification; larves de chironomidés; Territoires du Nord-Ouest; Yukon.

INTRODUCTION

A study of the benthic invertebrate fauna of the Mackenzie and Porcupine River watersheds by the Freshwater Institute, Environment Canada, Winnipeg, was supported by the Environmental-Social Committee, Canada Task Force on Northern Oil Development. The Biosystematics Research Institute, Agriculture Canada, Ottawa, under contract to the Freshwater Institute, undertook to identify chironomid larvae collected during the study. Over 150,000 chironomid larvae were identified and the keys presented in this report are based on these specimens.

Before the investigation by the Freshwater Institute only a few species of chironomids had been recorded from the District of Mackenzie and the Yukon Territory (Malloch 1919; Townes 1945; Roback 1971). As a result of the investigation, our knowledge of the chironomid fauna has increased taxonomically (Saether 1975a, 1976, 1977; Oliver, 1977), ecologically (Chang 1975, Rosenberg et al 1977a), and on effects of environmental disturbances (Rosenberg and Snow 1975; Snow and Rosenberg 1975; Snow et al 1975; Rosenberg and Wiens 1976; Rosenberg et al 1977b). Wiens et al (1975) lists taxa of chironomids found during the study. A comparison of the names used in Wiens et al (1975) and this report is presented in Appendix II.

These keys are intended as an aid to the identification of chironomid larvae living in the vast area of the Canadian northwest; however, they must be used with caution as they are based on a restricted part of the chironomid fauna. Most of the specimens were collected from three geographical areas which the Freshwater Institute selected for intensive studies (Brunskill et al 1973); the Fort Simpson area including the Harris, Jean Marie, Martin, Rabbitskin and Trail Rivers, Northwest Territories; the Porcupine River and its tributary, Caribou Bar Creek, in the vicinity of Old Crow, Yukon Territory; and the lakes and channels in the Mackenzie River Delta, Northwest Territories. In addition, some specimens were obtained from other tributary streams of the two watersheds, and a few from lakes in the region of Tuktoyaktuk. The majority of species in the keys inhabit medium-to large-sized rivers. Those living in lakes outside the Mackenzie Delta, small streams, springs, pools, and the vast northern wetland areas remain to be investigated.

A major problem besetting ecological investigations of chironomid fauna, especially in unworked areas such as the Canadian northwest, is species identification of larvae. Taxonomic knowledge of larvae lags behind that of adults. Most of our species identifications of larvae are based on reared specimens from the study area and from other areas of Canada. We consider the rearing of larvae to adults and association of life stages an essential part of any detailed study of chironomid larvae.

We have attempted to include only fourth instar larvae in the keys, but could not always be certain about this. Most of the larvae that could not be identified to species are given a species number. The status of these unnamed larvae is uncertain. Undoubtedly, some are larvae of undescribed species. Others may be sibling species (cf. Oliver 1977; Rosenberg et al 1977a). Notes on *some* species are attached to this report (Appendix I) and are

intended to be a guide to relevant literature on chironomid larvae.

The anatomical terminology used in the keys is shown in Figs. 1-7. For further information on the morphology of chironomid larvae see Mozley (1970), Saether (1971) and Hirvenoja (1973).

KEY TO SUBFAMILIES OF LARVAL CHIRONOMIDAE

1. Antenna retractile. Prementohypopharyngeal complex with a 4- to 8-toothed ligula (Fig. 4). Hypostomial plate membranous. Paralabial plate, if present, represented by toothed plate or rows of teeth (Fig. 4) Tanypodinae (p.3)
- Antenna non-retractile. Prementohypopharyngeal complex without toothed ligula. Hypostomial plate usually toothed (Figs. 5-7), maybe weakly sclerotized and translucent, (Fig. 198), but never membranous. Paralabial plate usually present (Figs. 5-7), never toothed 2
2. Procercus long, at least five times as long as wide (Fig. 32). Premandible absent Podonominae (p.4)
- Procercus shorter or absent; if present, then less than five times as long as wide. Premandible almost always present 3
3. Paralabial plate distinct, almost always striated, without setae (Figs. 5,6). Eye-spots usually separate and lying in a vertical plane (Fig. 2), or with dorsal eye-spot anterior to ventral eye-spot Chironominae (p.5)
- Paralabial plate present or absent; if present and distinct, never striated and with or without setae (Figs. 7, 130, 178, 201). Eye-spots usually single (Fig. 3), or if separate, dorsal eye-spot always posterior to ventral eye-spot 4
4. Third antennal segment annulated (Fig. 206). Prementohypopharyngeal complex with long setae divided into three groups Diamesinae (part) (p.20)
- Third antennal segment non-annulated. Prementohypopharyngeal complex with scales 5
5. Paralabial plate long and narrow, with setae (Fig. 201). Central part of hypostomial plate recessed (Fig. 200) Prodiamesinae; *Monodiamesa bathyphila*
- Paralabial plate, if present, smaller and usually not long and narrow, with or without setae. Hypostomial plate variable, usually convex (Fig. 7), rarely with central part recessed 6
6. Occipital margin of head capsule with distinct posteriorly directed projection on each side (Fig. 197); head capsule with numerous setae (Fig. 197). Middle three-quarters of hypostomial plate straight, without teeth (Fig. 196) Diamesinae (part) (p.20)

Occipital margin of head without, or with small, posteriorly directed projection on each side; head capsule with fewer setae, or rarely, if numerous, then hypostomial plate with teeth on central part. Hypostomial plate variable, usually convex, and central three-quarters of plate always with teeth Orthocladiinae (p.13)

KEY TO LARVAL TANYPODINAE

1. Paralabial teeth present (Figs. 4, 8). Abdominal segments with lateral setal fringe (Fig. 11). Head less than 1.5 times as long as wide 2
 2
 Paralabial teeth absent. Abdominal segments without lateral setal fringe. Head usually more than 1.5 times as long as wide 4
 Tribe Pentaneurini 4
2. Toothed margin of ligula convex (Fig. 14). Basal two thirds of mandible enlarged (Fig. 15) Tribe Tanypodini: *Tanypus* sp. 1
 Toothed margin of ligula concave or straight (Figs. 9, 12). Basal two-thirds of mandible not enlarged Tribe Macropelopiini 3
 Tribe Macropelopiini 3
3. Ligula with 4 yellow teeth; toothed margin straight (Fig. 12). Mandible with row of inner teeth (Fig. 13) *Derotanypus alaskensis*
 Ligula with 5 black teeth; toothed margin concave (Fig. 9). Mandible without row of inner teeth, but with 1 or 2 adjacent teeth (Fig. 10) *Procladius* spp.
 *Procladius* spp.
4. Maxillary palpus with 2-5 basal segments (Figs. 17-19) 5
 Maxillary palpus with 1 basal segment 8
5. Posterior parapod with 1-4 dark brown claws. Toothed margin of ligula concave (Fig. 16) *Ablabesmyia* 6
 Posterior parapod claws unicolorous. Toothed margin of ligula straight (Fig. 20) *Paramerina fragilis*
6. Maxillary palpus with 5 basal segments (Fig. 17) *Ablabesmyia* sp. 2
 Maxillary palpus with 2 or 3 basal segments (Figs. 18, 19) 7

7. Maxillary palpus with 2 basal segments (Fig. 18) *Ablabesmyia illinoensis*

 Maxillary palpus with 3 basal segments (Fig. 19) *Ablabesmyia* sp. 1
8. Ligula with median tooth longer than first lateral teeth (Figs. 23, 24) 9

 Ligula with median tooth equal to or shorter than first lateral teeth
 (Figs. 21, 22, 25, 27) 10
9. Second antennal segment darker in color than first segment. Anal tubules
 shorter than length of posterior parapods *Labrundinia* sp. 1
 Second antennal segment same color as first antennal segment. Anal tubules
 longer than length of posterior parapods *Nilotanypus fimbriatus*
10. Antenna about one-third length of head. Head about 1.7 times as long as
 wide *Natarsia baltimoreus*
 Antenna at least one-half length of head. Head greater than 1.8 times as
 long as wide 11
11. Head capsule granular. Body with undulated wrinkles
 *Guttipeloplia guttipennis*
 Head capsule smooth. Body smooth 12
12. Ligula with first lateral teeth pointed straight forward (Fig. 25). Mandible
 with large inner and accessory teeth (Fig. 26) *Larsia* sp. 1
 Ligula with first lateral teeth curved laterally (Fig. 27). Mandible with
 small inner and accessory teeth (Fig. 28)
 *Thienemannimyia*-group

KEY TO LARVAL PODONOMINAE

1. Median tooth forming apex of hypostomial plate (Fig. 33). Mandible with an
 apical tooth and 8 inner teeth; third inner tooth larger than remain-
 ing inner teeth *Lasiodiamesa brusti*
 Median teeth of hypostomial plate recessed (Figs. 29, 30). Mandible with
 an apical group of 6 teeth; teeth about equal in size (Fig. 31)
 *Trichotanypus* 2
2. Hypostomial plate with 3 recessed teeth (Fig. 30)
 *Trichotanypus posticalis*

- Hypostomial plate with 4 recessed teeth (Fig. 29) *Trichotomypus* sp. 1

KEY TO LARVAL CHIRONOMINAE

1. Antenna usually long, 5-segmented, mounted on a tubercle at least as long as wide (Fig. 6); first antennal segment curved; Lauterborn organs prominent, opposite on apex of second segment, and maybe mounted on long petioles (Fig. 6). Abdominal segments usually with plumose setae Tribe Tanytarsini 43

Antenna usually shorter, 4 to 7-segmented, rarely mounted on a tubercle; if mounted, then tubercle shorter than wide (Fig. 5); first antennal segment straight, except in *Pagastiella*; Lauterborn organs smaller, either opposite on apex of second segment or alternate on apices of second and third segments, never mounted on long petioles. Abdominal segments usually with simple setae 2

2. Posterior parapod with 2 rows of claws arranged in a horseshoe shape. Mesal apices of paralabial plates contiguous or very narrowly separated (Fig. 45) Tribe Pseudochironomini; *Pseudochironomus fulviventrīs*

Posterior parapod with claws irregularly arranged. Mesal apices of paralabial plates usually separated by more than width of median or median pair of teeth of hypostomial plate Tribe Chironomini 3

Chironomini

3. Eleventh body segment with 1 or 2 pairs of ventral tubules (Fig. 2). Median tooth of hypostomial plate trifid (Figs. 34, 36, 39) 4

Eleventh body segment without ventral tubuli. Median tooth of hypostomial plate variable 10

4. Eleventh body segment with 1 pair of ventral tubules *Einfeldia* 5

Eleventh body segment with 2 pairs of ventral tubules *Chironomus* (part) 7

5. Pecten epipharyngis with less than 10 teeth (Fig. 40). Third segment of antenna one-half length of fourth segment *Einfeldia* sp. 3

Pecten epipharyngis with more than 10 teeth. Third segment of antenna more than one-half length of fourth segment 6

6. Fronto-clypeal apotome with oval depression (Fig. 41) *Einfeldia synchrona*

- Fronto-clypeal apotome without oval depression *Einfeldia* sp. 2
7. Tenth body segment with a distolateral projection on each side (Fig. 38).
 Larval length usually greater than 20 mm
 *Chironomus* (*Chironomus*); *plumosus*-group
- Tenth body segment without distolateral projections. Larval length usually
 less than 18 mm 8
8. Pecten epipharyngis with 18 or more teeth; teeth irregular in length and
 width *Chironomus* (*Chaetolabis*) sp. 5
- Pecten epipharyngis with less than 18 teeth; teeth about equal in size or
 become progressively smaller laterally 9
9. Ring organ at about middle of first antennal segment. Larval length about
 15-18 mm *Chironomus* (*Chironomus*); *anthracinus*-group
- Ring organ at about one-third of distance from base to apex of first anten-
 nal segment. Larval length about 12 mm
 *Chironomus* (*Chironomus*); *thummi* (= *riparius*)-group
10. Hypostomial plate with a distinctly trifold median tooth (Figs. 35, 37).
 *Chironomus* (*Chironomus*) 11
- Hypostomial plate variable (Figs. 42, 46), median tooth not trifold but maybe
 notched laterally (Figs. 71, 75), or if first lateral teeth appressed
 to median tooth thus appearing trifold, then fifth, sixth and seventh
 lateral teeth forming a compound tooth (Figs. 59-61) 12
11. Anterior margin of paralabial plate smooth. Median tooth of hypostomial
 plate low and broad; apex of central part smooth (Fig. 35)
 *Chironomus* (*Chironomus*); *salinarius*-group sp. 2
- Anterior margin of paralabial plate crenulate. Median tooth of hypostomial
 plate high; apex of central part notched (Fig. 37)
 *Chironomus* (*Chironomus*); *salinarius*-group sp. 4
12. Dorsum of eleventh body segment with protuberance (Fig. 43). Seta posterior
 to paralabial plate plumose (Fig. 44). Antenna 6-segmented
 *Lauterborniella agrayloides*
- Dorsum of eleventh body segment without protuberance. Seta posterior to
 paralabial plate simple. Antenna usually 5-segmented, sometimes with
 6 or more segments 13
13. Mesal apices of paralabial plates separated by less than width of median
 tooth of hypostomial plate (Fig. 46) *Xenochironomus* sp. 1

- Mesal apices of paralabial plates separated by more than width of median tooth or pair of median teeth of hypostomial plate 14
14. First antennal segment at most two-thirds as long as combined length of remaining segments. Hypostomial plate straight, narrow, and with conical teeth (Fig. 47). Anterior margin of paralabial plate with several leaf-like projections (Fig. 47) *Robackia demeijerei*
- First antennal segment more than two-thirds as long as combined length of remaining segments. Hypostomial plate usually convex or concave, if straight, then teeth not conical (Figs. 55, 56). Anterior margin of paralabial plate smooth or evenly crenulated (Figs. 58, 62) 15
15. SI simple (Fig. 52) 16
- SI pectinate or plumose (Figs. 67, 72) 26
16. Projection on head capsule dorsal to antennal base with 2-4 apical teeth (Fig. 49). First antennal segment somewhat curved. Hypostomial plate with blunt teeth (Fig. 48) *Pagastiella ostansa*
- Projection on head capsule dorsal to antennal base absent. First antennal segment not curved. Hypostomial plate not as above 17
17. Premandible with 3 or more teeth. Basal segment of maxillary palpus usually at least twice as long as wide 18
- Premandible with 2 teeth. Basal segment of maxillary palpus usually less than twice as long as wide 23
18. Hypostomial plate with a light-colored, dome-shaped median tooth which contrasts strongly in color with blackish lateral teeth; lateral teeth arch anterolaterally (Figs. 50, 51) 19
- Hypostomial plate usually without light-colored, dome-shaped median tooth, if a dome-shaped median tooth present, not strongly contrasting in color with lateral teeth and these not arched anterolaterally (Fig. 54) 20
19. Hypostomial plate with 7 pairs of lateral teeth (Fig. 50). Antenna 6- or 7-segmented *Demicryptochironomus* sp. 1
- Hypostomial plate with 5 pairs of lateral teeth (Fig. 51). Antenna 5-segmented *Cryptochironomus digitatus*

20. Hypostomial plate with a subtriangular median tooth (Fig. 53) *Acalcarella* sp. 1

- Hypostomial plate with double to deeply cleft (Figs. 55, 56) or a dome-shaped median tooth (Fig. 54) 21
21. Hypostomial plate with a dome-shaped median tooth (Fig. 54). Antenna 6-segmented *Saetheria tylus*
 Hypostomial plate with double to deeply cleft median tooth (Figs. 55, 56). Antenna 5-segmented 22
22. Third antennal segment about three-quarters as long as second segment. Striae on paralabial plate faint, evanescent towards anterior margin *Harmischia curtilamellata*

- Third antennal segment less than one-quarter as long as second segment. Striae on paralabial plate strong, widely spaced and clearly continuing to anterior margin *Paracladopelma* sp. 1
23. Median tooth of hypostomial plate less than twice as wide as a first lateral tooth; first lateral teeth not appressed to median tooth and outer 3 lateral teeth separate (Fig. 57). Anterior margin of paralabial plate crenulated (Fig. 58). Usually 3 eye-spots present *Parachironomus* sp. 1

- Median tooth of hypostomial plate at least twice as wide as a first lateral tooth; first lateral teeth appressed to median tooth and outer 3 lateral teeth forming a compound tooth (Figs. 59-61). Anterior margin of paralabial plate smooth or weakly crenulated (Fig. 62). Two eye-spots present 24
24. Median tooth of hypostomial plate apically notched (Fig. 59) *Cladopelma* sp. 1

- Median tooth of hypostomial plate apically subtriangular (Figs. 60, 61) *Cryptotendipes* 25

25. Gular region of head capsule uniformly yellowish-brown. Second lateral tooth of hypostomial plate smaller than third lateral tooth (Fig. 60) *Cryptotendipes* sp. 1

- Posterior half of gular region of head capsule dark brown. Second lateral tooth of hypostomial plate about equal in size to third lateral tooth (Fig. 61) *Cryptotendipes* sp. 2
26. Antenna 6-segmented 27
 Antenna 5-segmented 31

27. Hypostomial plate uniform in color (Figs. 63, 64) *Stictochironomus* 28
 Hypostomial plate with 1 to 4 median teeth lighter in color than lateral
 teeth (Figs. 65, 66, 68) 29
28. Hypostomial plate without median teeth, i.e. first lateral teeth separated
 by U-shaped notch (Fig. 64) *Stictochironomus* sp. 3
 Hypostomial plate with 2 median teeth (Fig. 63) *Stictochironomus* spp.
29. Hypostomial plate with single, broad, and dome-shaped median tooth (Fig. 65)
 *Paralauterborniella nigrohalteralis*
 Hypostomial plate with 2-4 light colored median teeth (Figs. 66, 68)
 30
30. Hypostomial plate with 2 light colored median teeth (Fig. 66); occasionally
 small tooth in between median pair *Microtendipes pedellus*
 Hypostomial plate with 4 light colored median teeth (Fig. 68)
 *Paratendipes* sp. 1
31. Hypostomial plate concave with ten large black teeth (Fig. 69). Paralabial
 plate without striae *Stenochironomus* sp. 1
 Hypostomial plate usually convex, if concave, then with more than ten teeth.
 Paralabial plate with striae 32
32. Anterior margin of paralabial plate crenulated (Figs. 73, 76) 33
 Anterior margin of paralabial plate smooth 36
33. Paralabial plate 1-1.5 times as long as wide (Fig. 73). Pecten epipharyn-
 gis with 7 teeth or less *Dicrotendipes* 34
 Paralabial plate at least twice as long as wide (Fig. 76). Pecten epipharyn-
 gis with more than 7 teeth *Glyptotendipes* 35
34. First and second lateral teeth of hypostomial plate separate (Fig. 70). Out-
 er and inner teeth of premandible about equal in size
 *Dicrotendipes nervosus*
 Second lateral tooth of hypostomial plate partly fused to first lateral
 tooth (Fig. 71). Outer tooth of premandible narrower than inner tooth
 *Dicrotendipes* sp. 1

35. Hypostomial plate trapezoidal in shape, lateral margins steeply sloped inwards (Fig. 74); median tooth shorter than first lateral teeth and without lateral notches *Glyptotendipes (Glyptotendipes) dreisbachi*
- Hypostomial plate evenly arched (Fig. 75); median tooth larger than first lateral tooth and usually notched laterally *Glyptotendipes (Phytotendipes) sp.* 3
36. First lateral teeth of hypostomial plate shorter than median and second lateral teeth (Figs. 77, 79-81) *Polypedilum (part)* 37
- First lateral teeth of hypostomial plate longer than or about same size as median and second lateral teeth 40
37. Mesal apices of paralabial plates turned posteriorly (Figs. 77, 79). Posterior area of gular region of head capsule darker than anterior area 38
- Mesal apices of paralabial plates turned anteriorly (Fig. 80). Gular region of head capsule unicolored 39
38. Third antennal segment longer than fourth segment *Polypedilum (Polypedilum) nubeculosum*
- Fourth antennal segment about twice as long as third segment *Polypedilum (Tripodura) sp.* 1
39. Hypostomial plate teeth pointed (Fig. 81) *Polypedilum (Polypedilum) ophioides*
- Hypostomial plate teeth rounded (Fig. 80) *Polypedilum (Polypedilum) illinoense*
40. First lateral teeth of hypostomial plate about same size as median and second lateral teeth (Fig. 78). Paralabial plate with a single band of striae *Polypedilum (Polypedilum) laetum*
- First lateral teeth of hypostomial plate longer than median and second lateral teeth (Figs. 82, 87). Paralabial plate with an anterior and a central band of striae (Figs. 83, 86, 88) 41
41. SII plumose with 1 strong central branch bearing several smaller branches on each side. Central band of striae on paralabial plate stronger and more widely spaced than anterior band (Fig. 83). Mandible with 3 inner teeth (Fig. 84) *Endochironomus sp.* 1

SII finely plumose, all branches thin and about equal in size. Anterior band of striae on paralabial plate stronger and more widely spaced than central band (Fig. 86). Mandible with 4 inner teeth *Phaenopsectra* 42

42. Pecten epipharyngis in 3 parts. Anterior band of striae on paralabial plate distinctly spaced wider than central band (Fig. 86). Apices of teeth of hypostomial plate pointed (Fig. 85) *Phaenopsectra* sp. 1

Pecten epipharyngis more or less continuous, 3 parts weakly defined. Both bands of striae on paralabial plate about equal in development (Fig. 88). Apices of teeth of hypostomial plate rounded *Phaenopsectra* sp. 2

Tanytarsini

43. Median apices of paralabial plates pointed, widely separate from each other (Figs. 89, 91, 95) 44

Median apices of paralabial plates blunt or rounded, almost meeting each other at midline of head capsule (Figs. 100, 102, 105, 109, 111) 49

44. Lauterborn organs mounted at different levels on second antennal segment (Fig. 90); second antennal segment as long as or longer than combined length of third to fifth segments *Stempellinella* sp. 1

Lauterborn organs mounted on apex of second antennal segment; second antennal segment about one-half as long as combined length of third to fifth segments 45

45. Apicomesal projection on antennal tubercle palmate (Figs. 93, 94) *Stempellina* 46

Apicomesal projection on antennal tubercle simple (Fig. 96) *Constempellina* 48

46. Procercus enlarged with many coarse spines (Fig. 92). *Stempellina* sp. 3
- Procercus not enlarged and without spines 47

47. Apicomesal projection on antennal tubercle with 4-5 long branches (Fig. 93) *Stempellina* sp. 1

Apicomesal projection on antennal tubercle with 6 short branches (Fig. 94) *Stempellina* sp. 2

48. Frontoclypeal apotome with pair of plumose setae (Fig. 97) *Constempellina* sp. 2

 Frontoclypeal apotome with pair of stout, simple setae *Constempellina* sp. 1

49. Hypostomial plate with 3 teeth (Fig. 98). Mandible without distinct teeth
 (Fig. 99) *Corynocera* sp. 1
 Hypostomial plate with at least 9 teeth (Figs. 100, 105, 112, 115).
 Mandible with distinct apical and inner teeth 50
50. Petiole of Lauterborn organ shorter than combined length of last three
 antennal segments or absent 51
 Petiole of Lauterborn organ longer than combined length of last three
 antennal segments 56
51. Pecten epipharyngis composed of 10-16 simple teeth (Fig. 101). Petiole
 longer than 1.5 times length of Lauterborn organ *Rheotanytarsus* sp. 1

 Pecten epipharyngis composed of 3-5 broad teeth (Figs. 103, 104). Petiole
 absent or shorter than 1.5 times length of Lauterborn organ 52
52. Teeth of pecten epipharyngis simple *Paratanytarsus* 53
 Teeth of pecten epipharyngis pectinate (Fig. 108) *Cladotanytarsus* 54

53. Pecten epipharyngis with 3 teeth (Fig. 103) *Paratanytarsus* sp. 1
 Pecten epipharyngis with 5 teeth (Fig. 104) *Paratanytarsus* sp. 2
54. Hypostomial plate with 13 teeth; median tooth single (Fig. 105) *Cladotanytarsus* sp. 1

 Hypostomial plate with less than 13 teeth; never with a single median
 tooth 55
55. Hypostomial plate with a compound median tooth (Fig. 107) *Cladotanytarsus* sp. 3

 Hypostomial plate with a trifid median tooth (Fig. 106) *Cladotanytarsus* sp. 2

56. Tubercle of antenna with a straight or curved apicomesal projection
(Fig. 110) *Micropsectra* 57
- Tubercle of antenna without a straight or curved apicomesal projection .
. *Tanytarsus* 59
57. Projection on tubercle of antenna greater than 2.5 times as long as wide
(Fig. 110) *Micropsectra* sp. 1
- Projection on tubercle of antenna less than 2.5 times as long as wide
. 58
58. Hypostomial plate with first lateral teeth appressed to median tooth (Fig.
112) *Micropsectra* sp. 3
- Hypostomial plate with first lateral teeth distinctly separated from median
tooth (Fig. 111) *Micropsectra* sp. 2
59. Head capsule darkly pigmented. First segment of antenna less than one-
half length of mandible *Tanytarsus* sp. 3
- Head capsule light. First segment of antenna as long as or longer than
mandible 60
60. Hypostomial plate with median and lateral teeth uniformly dark (Fig. 114)
. *Tanytarsus* sp. 2
- Hypostomial plate with median or at least part of median tooth light
colored (Fig. 113) *Tanytarsus* sp. 1

KEY TO LARVAL ORTHOCLADIINAE

1. Preanal abdominal segment with 2 procerci; each bearing anal setae 2
- Preanal abdominal segment without procerci (Fig. 3); anal setae, if
present, short and arising directly from segment 46
2. Antenna at least one-half as long as head, generally longer; usually second
and/or third segment dark (Figs. 120, 121, 125) 3
- Antenna shorter, usually less than one-half as long as head; segments
uniformly pigmented 9

3. Antenna 4-segmented (Figs. 120, 121). Ventrobasal seta on posterior proleg plumose (Fig. 119) *Corynoneura* 4
 Antenna 5-segmented (Fig. 125). Ventrobasal seta on posterior proleg simple *Thienemanniella* 7
4. Hypostomial plate with 10 teeth (Fig. 117) *Corynoneura* sp. 4
 Hypostomial plate with 13 teeth (Figs. 116, 118) 5
5. Median tooth of hypostomial plate about equal in size to a first lateral tooth (Fig. 118). Second antennal segment about two-thirds as long as third segment *Corynoneura* sp. 5
 Median tooth of hypostomial plate much smaller than a first lateral tooth (Fig. 116). Second antennal segment about as long as third segment (Figs. 120, 121) 6
6. Second and third antennal segments dark (Fig. 120) . . . *Corynoneura* sp. 1
 Only third antennal segment darker, this frequently not contrasting strongly with remaining segments (Fig. 121) *Corynoneura* sp. 2
7. Median tooth of hypostomial plate small, indistinct (Fig. 124). First and second inner teeth of mandible subequal in size and each smaller than apical tooth. Second antennal segment slightly darker than other segments *Thienemanniella* sp. 3
 Median tooth of hypostomial plate at least one-half length of first lateral tooth (Figs. 122, 123). Apical and first inner tooth of mandible subequal in size and each larger than second inner tooth. Second antennal segment distinctly darker than other segments 8
8. Median tooth of hypostomial plate shorter than first lateral teeth (Fig. 122) *Thienemanniella* sp. 1
 Median tooth of hypostomial plate equal to or longer than first lateral teeth (Fig. 123) *Thienemanniella* sp. 2
9. Procercus with 2 anal setae; one at least one-quarter as long as length of larva. Hypostomial plate with broad median tooth with apical projection and rounded shoulders, and 6 pairs of lateral teeth (Fig. 126) *Krenosmittia* sp. 1
 Procercus with more than 2 anal setae, usually 5 or more; no seta as long as one-quarter length of larva. Hypostomial plate variable, if median tooth with apical projection then shoulders not rounded but angular 10

10. Procercus with spurs (Figs. 131, 138, 140). Paralabial plate large (Figs. 127-129, 134, 136) 11
 Procercus without spurs. Paralabial plates smaller, often indistinct 17
11. Paralabial plate without setae (Fig. 127) *Nanocladius* (*Nanocladius*) sp. 1
 Paralabial plate with setae (Figs. 128-130, 134, 136) 12
12. SI bifid. Caudolateral end of paralabial plate rounded (Figs. 128-130) *Rheocricotopus* 13
 SI palmate, branches deeply separated and more or less equal in size (Fig. 132). Caudolateral end of paralabial plate truncate or angular (Figs. 134, 136), rarely rounded *Psectrocladius* 14
13. Procercus with 3 anal setae; setae on paralabial plate located on lateral one-third (Fig. 130) *Rheocricotopus* sp. 2
 Procercus with 5 anal setae. Setae on paralabial plate, fewer in number, thicker in diameter, and extend over most of posterior area of paralabial plate (Fig. 128) *Rheocricotopus* sp. 1
14. Hypostomial plate with a broad, light colored median tooth; apex weakly notched or bearing 2 small nipple-like projections (Fig. 134). Apical tooth of mandible longer than combined width of inner teeth (Fig. 133) 15
 Hypostomial plate with 2 median teeth more or less concolorous with lateral teeth (Figs. 135, 136). Apical tooth of mandible, at most, as long as combined width of inner teeth 16
15. Procercus with basal rugose area composed of 4 or 5 short spurs (Fig. 138). Apex of premandible yellowish-brown, narrow, and sickle-shaped (Fig. 137) *Psectrocladius simulans*
 Procercus with a basal, long and bifid spur (Fig. 140). Apex of premandible blackish-brown, broader and more strongly curved (Fig. 139) *Psectrocladius* sp. 1
16. Median teeth of hypostomial plate slope anteromesally to a broad projection; medial notch separating teeth shallow (Fig. 135) *Psectrocladius* sp. 3

- Median teeth of hypostomial plate apically rounded; median notch separating teeth deep (Fig. 136) *Psectrocladius* sp. 4
17. Hypostomial plate truncated with 6 teeth along apex and 5 pairs of teeth laterally (Fig. 141). Antenna 4-segmented. Mandible with 1-2 inner teeth (Fig. 142) *Epoicocladius flavens*
- Hypostomial plate usually arched, if somewhat truncated, then with less than 6 teeth along apex (Fig. 148). Antenna usually with 5 or more segments, rarely with 4. Mandible usually with more than 2 inner teeth 18
18. Inner margin of mandible posterior to inner teeth with spines¹ (Figs. 149, 153) 19
- Inner margin of mandible posterior to inner teeth smooth 26
19. Hypostomial plate with 6 pairs of lateral teeth; median tooth dome-shaped (Figs. 151, 152). SI bifid *Cricotopus* (*Cricotopus*) (part); *bicinctus*-group 20
- Hypostomial plate with 5 pairs of lateral teeth; median tooth with 1 or 4 nipple-like projections (Figs. 143, 148), notched (Figs. 144-146), or more or less divided into 2 teeth (Fig. 147). SI simple or plumose *Eukiefferiella* 21
20. Head capsule width less than 263 μ . Mandible length less than 135 μ *Cricotopus* (*Cricotopus*) *mackenziensis*
- Head capsule width greater than 268 μ . Mandible length greater than 143 μ *Cricotopus* (*Cricotopus*) *bicinctus*
21. Median tooth of hypostomial plate with nipple-like projections (Figs. 143, 148) 22
- Median tooth of hypostomial plate apically notched or more or less divided into 2 teeth 23
22. Median tooth of hypostomial plate with 1 nipple-like projection (Fig. 143). SI simple *Eukiefferiella* sp. 1

¹These spines may be absent or rubbed off in *Eukiefferiella* sp. 7. The combination of a finely plumose SI, abdominal segments with numerous long, brown and simple setae, and the shape of the hypostomial plate (Fig. 144) will distinguish this species.

- Median tooth of hypostomial plate with 4 nipple-like projections (Fig. 148).
 SI finely plumose *Eukiefferiella* sp. 6
23. Antenna 4-segmented *Eukiefferiella claripennis*
 Antenna 5-segmented 24
24. SI finely plumose *Eukiefferiella* sp. 7
 SI simple 25
25. Apical tooth of mandible subequal in length with first inner tooth . . .
 *Eukiefferiella* sp. 4
 Apical tooth of mandible at least 1.5 times as long as first inner tooth
 *Eukiefferiella paucunca*
26. SI simple. Apex of second segment of antenna expanded. Hypostomial plate
 sub-triangular with long, shallowly notched median tooth (Fig. 150) .
 *Synorthocladus* sp. 1
 SI bifid (Fig. 159), or plumose (Figs. 180, 189, 191). Apex of second seg-
 ment of antenna usually cylindrical. Hypostomial plate not as above
 (Figs. 154-157, 160-164, 166-174) 27
27. SI bifid (Fig. 159) 28
 SI plumose (Figs. 180, 189, 191) 36
28. Pecten epipharyngis composed of a conical plate. (Fig. 165)
 *Cricotopus (Isocladus)* 29
 Pecten epipharyngis composed of 3 equal-sized teeth (Fig. 159)
 *Cricotopus (Cricotopus)* (part) 30
29. Premandible with 2 apical teeth *sylvestris*-group
 Premandible with 1 apical tooth *laricomalis*-group
30. Abdominal segments with plumose setae (Fig. 158) 31
 Abdominal segments with only simple setae 33
31. Median tooth of hypostomial plate less than 2.5 times as wide as first
 lateral tooth *tremulus*-group

- Median tooth of hypostomial plate greater than 2.5 times as wide as first lateral tooth (Figs. 156, 157, 160) 32
32. Hypostomial plate with all lateral teeth approximately equal in size (Figs. 156, 157) *festivellus*-group
- Hypostomial plate with first and second lateral teeth smaller in size than other lateral teeth (Fig. 160) *cylindraceus*-group
33. Antenna 4-segmented *Orthocladius* (*Pogonocladius*) sp. 1
- Antenna 5-segmented 34
34. Hypostomial plate with more than 13 teeth (Figs. 167, 168) *Orthocladius* (*Euorthocladius*) 35
- Hypostomial plate with 13 teeth (Figs. 169-174) *Cricotopus* (*Cricotopus*) or *Orthocladius* (*Orthocladius*)
35. Hypostomial plate with 21 teeth (Fig. 167) *Orthocladius* (*Euorthocladius*) sp. 1
- Hypostomial plate with 15 teeth (Fig. 168) *Orthocladius* (*Euorthocladius*) sp. 2
36. Antenna 4- or 5-segmented 37
- Antenna 6- or 7-segmented; sixth or seventh segment sometimes hair-like and difficult to see 42
37. Pectinate labral lobes present (Fig. 175) 38
- Pectinate labral lobes absent 39
38. Antenna 5-segmented; second segment shorter than third segment. Fifth and sixth lateral teeth of hypostomial plate equal in size to and slope evenly from fourth lateral tooth (Fig. 176) *Brillia* sp. 1
- Antenna 4-segmented; second segment longer than third segment. Fifth and sixth lateral teeth of hypostomial plate smaller than and set at angle to fourth lateral tooth (Fig. 177) *Eurycnemus* sp. 1
39. Paralabial plate with long setae (Fig. 178). Hypostomial plate with 2 median teeth about equal in size to first lateral teeth (Fig. 179) *Diplocladius cultriger*

- Paralabial plate without setae. Hypostomial plate with 1 or 2 median teeth, if 2, then these larger than first lateral teeth 40
40. Premandible with 5 or more apical teeth (Fig. 181). Hypostomial plate with 2 median teeth (Fig. 182) *Parametriocnemus graminicola*
- Premandible with 2-3 apical teeth. Hypostomial plate with 1 median tooth (Fig. 183) *Paraphaenocladus* 41
41. Antenna less than one-half length of mandible (Fig. 184) *Paraphaenocladus* sp. 1
- Antenna longer than length of mandible (Fig. 185) *Paraphaenocladus* sp. 2
42. Hypostomial plate with 1 median tooth (Fig. 186) *Parakiefferiella* sp. 1
- Hypostomial plate with 2 median teeth (Figs. 187, 188, 190) 43
43. Antenna about equal in length to mandible; 7-segmented *Heterotrissocladus changi*
- Antenna about one-half length of mandible; 6-segmented 44
44. Paralabial plate bulbaceous and without setae (Fig. 190). Blade of antenna ending about level of antennal tip *Hydrobaenus* sp. 1
- Paralabial plate narrower and with setae. Blade of antenna ending beyond antennal tip *Zalutschia* 45
45. Mesal teeth of hypostomial plate lighter in color than darker lateral teeth *Zalutschia zalutschicola*
- Teeth of hypostomial plate uniform in color (Fig. 188) *Zalutschia* sp. 1
46. Median area of hypostomial plate concave and flanked by conical teeth; lateral teeth peg-like, grouped and not contiguous with median area (Fig. 192). Inner teeth of mandible peg-like *Symbiocladus equitans*
- Median area of hypostomial plate convex with broad median tooth; lateral teeth contiguous with median tooth (Figs. 193, 194). Inner teeth of mandible broadly rounded or triangular 47

47. Mandible without seta interna. SI bifid *Pseudosmittia*-group
 Mandible with seta interna. SI plumose (Fig. 195) *Smittia*-group

KEY TO LARVAL DIAMESINAE

1. Hypostomial plate without teeth or only with extreme lateral teeth
 (Figs. 196, 198) 2
 Hypostomial plate with teeth along anterior margin (Figs. 199, 202-204,
 207) Tribe Diamesini (part) 3
2. Hypostomial plate without teeth (Fig. 198). Occipital margin of head
 capsule without posteriorly directed projection on each side . . .
 Tribe Diamesini (part) *Potthastia longimanus*
 Hypostomial plate with only extreme lateral teeth (Fig. 196). Occipital
 margin of head capsule with posteriorly directed projection (Fig. 197)
 Tribe Protanypodini *Protanypus* sp. 1
3. Hypostomial plate with a broad, light colored median tooth (Fig. 199)
 *Potthastia* sp. 3
 Hypostomial plate with double or single median tooth; if single, then less
 than twice as wide as a first lateral tooth (Figs. 202-204, 207) . .
 *Diamesa* 4
4. Abdominal segments with black setae. Hypostomial plate with 13 teeth
 (Fig. 203) *Diamesa* sp. 2
 Abdominal segments without black setae. Hypostomial plate with more than
 13 teeth (Figs. 202, 204, 207) 5
5. Hypostomial plate with 15 teeth (Fig. 207). Mandible with both apical and
 first inner teeth subequal in size with second inner teeth . . .
 *Diamesa* sp. 4
 Hypostomial plate with more than 15 teeth (Figs. 202, 204). Mandible with
 both apical and first inner tooth larger than second inner tooth . .
 6
6. Hypostomial plate with 22 teeth (Fig. 202). Premandible with 5-6 teeth
 *Diamesa* sp. 1
 Hypostomial plate with 17 teeth (Fig. 204). Premandible with 7 teeth
 (Fig. 205) *Diamesa* sp. 3

ACKNOWLEDGEMENTS

The data for this report were obtained as a result of investigations carried out under the Environmental-Social Program, Northern Pipelines, Government of Canada. These keys were originally intended for use by personnel of the Freshwater Institute, Environment Canada, Winnipeg as an aid for identifying chironomid larvae from the Canadian Northwest. Dr. D. M. Rosenberg suggested that they be published in the Technical Report series of the Fisheries and Marine Service, Canada Department of Fisheries and the Environment. We wish to thank Dr. Rosenberg for his suggestion, for his encouragement and for attending to the details of publication. We also thank the Freshwater Institute for publishing these keys.

The authors would like to thank the following people for their assistance in collecting, rearing, and preparing specimens: G. Collins, L. Hill, L. Lefebvre, B. Nelson, M. Stewart (nee van Det), J. Robillard and A. Wiens. We also wish to thank Drs. D. Barton, D. M. Rosenberg, and O. A. Saether for helpful comments on the manuscript. The drawings (Figs. 1-7) were made by R. Edema, Biosystematics Research Institute, Ottawa.

REFERENCES

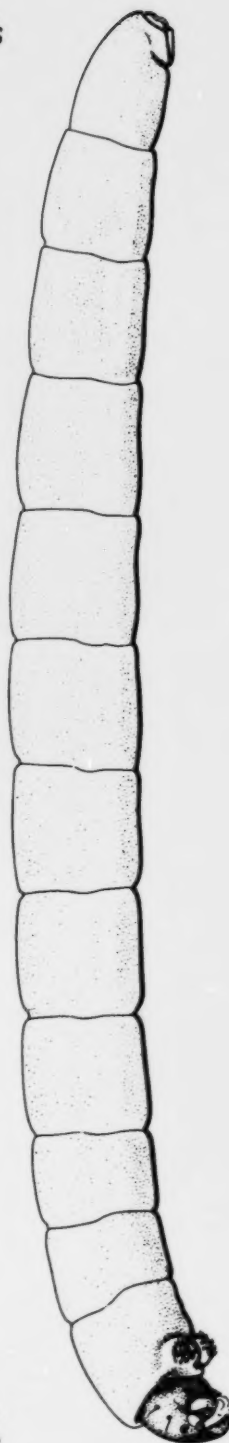
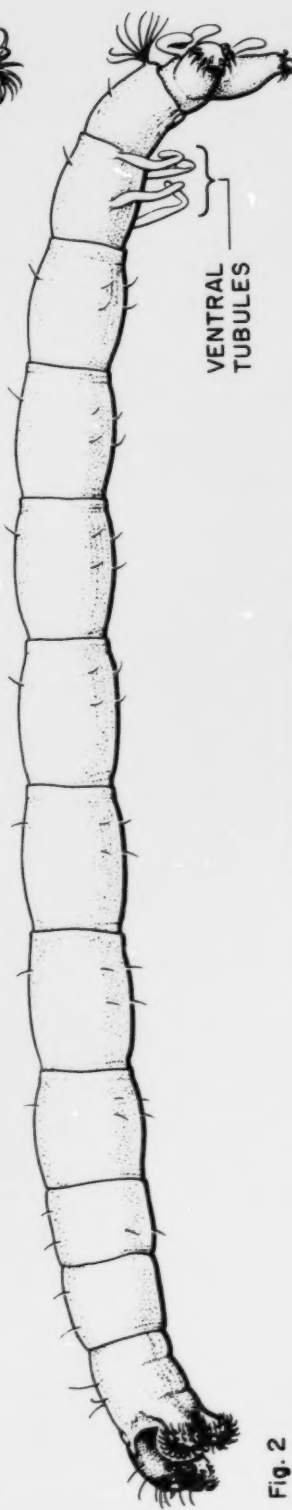
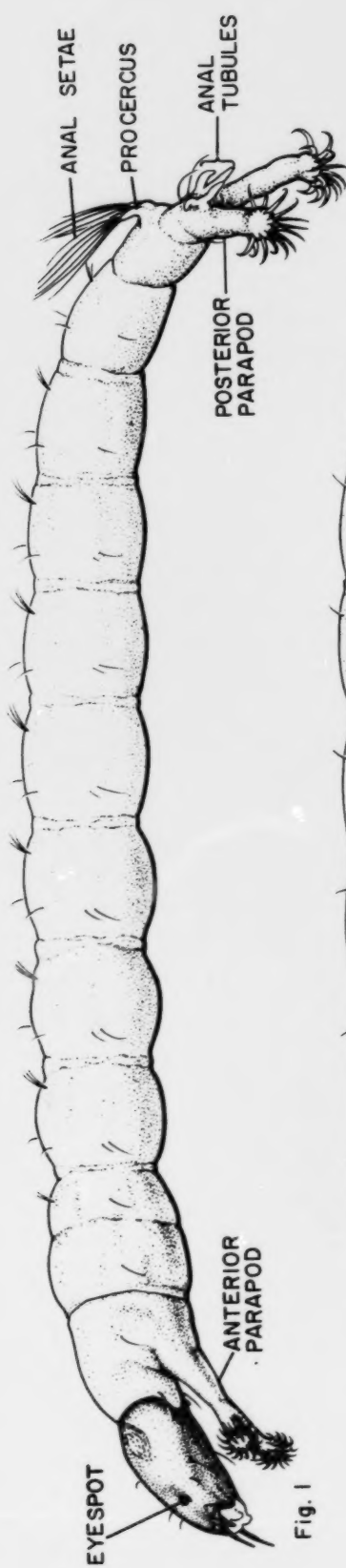
- ANDERSEN, F. S. 1937. Ueber die Metamorphose der Ceratopogoniden und Chironomiden Nordost-Grönlands. *Medd. Grönl.* 116: 1-95.
- BAUSE, E. 1914. Die Metamorphose der Gattung *Tanytarsus* und einiger verwandter Tendipedidenarten. Ein Beitrag zur Systematik der Tendipediden. *Arch. Hydrobiol. Supplementb.* 2: 1-128.
- BECK, E. C., and W. M. BECK, Jr. 1969. Chironomidae (Diptera) of Florida. III. The *Harnischia* complex (Chironomidae). *Bull. Fla. State Mus. Biol. Sci.* 13: 277-313.
- BECK, W. M., Jr., and E. C. BECK. 1966. Chironomidae (Diptera) of Florida I. Pentaneurini (Tanypodinae). *Bull. Fla. State Mus. Biol. Sci.* 10: 305-379.
- BECK, W. M., Jr. and E. C. BECK. 1970. The immature stages of some Chironomini (Chironomidae). *Q. J. Fla. Acad. Sci.* 33: 29-42.
- BERG, C. O. 1950. Biology of certain Chironomidae reared from *Potamogeton*. *Ecol. Monogr.* 20: 83-101.
- BRUNSKILL, G. J., D. M. ROSENBERG, N. B. SNOW, G. L. VASCOTTO, and R. WAGEMANN. 1973. Ecological studies of aquatic systems in the Mackenzie-Porcupine drainages in relation to proposed pipeline and highway developments. *Can. Task Force North. Oil Dev. Environ. Soc. Comm. Vol. I. Rep.* 73-40: 131 p. Vol. II. *Append. Rep.* 73-41: 345 p.
- BRYCE, D. 1960. Studies on the larvae of the British Chironomidae (Diptera), with keys to the Chironominae and Tanypodinae. *Trans. Soc. Br. Entomol.* 15: 19-62.
- CHANG, P. S. 1975. Emergence of insects from Shell Lake and Explosive Lake, Mackenzie Delta, N.W.T. *Can. Fish. Mar. Serv. Tech. Rep.* 554: 14 p.
- CHERNOVSKII, A. A. 1949. (Identification of larvae of the midge family Tendipedidae.) *Opred. Fauna SSSR* 31: 1-186. (In Russian. Transl. by Natl. Lending Library for Sci. Technol., Boston Spa, Yorkshire, England, 1961- available as TT62-13587 from Clearinghouse for Scientific and Technical Information.)
- CURRY, L. L. 1958. Larvae and pupae of the species of *Cryptochironomus* (Diptera) in Michigan. *Limnol. Oceanogr.* 3: 427-442.
- HAUBER, U. A. 1947. The Tendipedinae of Iowa (Diptera). *Am. Midl. Nat.* 38: 456-465.
- HIRVENOJA, M. 1973. Revision der Gattung *Cricotopus* van der Wulp und ihrer Verwandten (Diptera: Chironomidae). *Ann. Zool. Fenn.* 10: 1-363.
- JACKSON, G. A. 1977. Nearctic and palaearctic *Paracladopelma* Harnisch and *Saetheria* n. gen. (Diptera: Chironomidae). *J. Fish. Res. Board Can.* 34: 1321-1359.
- JOHANNSEN, O. A. 1937. Aquatic Diptera. Part III. Chironomidae: Subfamilies Tanypodinae, Diamesinae, and Orthoclaadiinae. *Mem. Cornell Univ. Agric. Exp. Stn.* 205: 1-84.
- JOHANNSEN, O. A. 1937. Aquatic Diptera. Part IV. Chironomidae: Subfamily Chironominae. *Mem. Cornell Univ. Agric. Exp. Stn.* 210: 1-52.
- LEHMANN, J. 1972. Revision der europäischen Arten (Puppen ♂♂ und Imagines ♂♂) der Gattung *Eukiefferiella* Thienemann. (Diptera: Chironomidae). *Beitr. Entomol.* 22: 347-405.
- LENZ, F. 1954-62. Tendipedidae (Chironomidae) b. Subfamilie Tendipedinae (Chironominae). B. Die Metamorphose der Tendipedinae, p. 138-160. In E. Lindner (ed.) *Die Fliegen der palaearktischen Region* 3(13c).
- MALLOCH, J. R. 1915. The Chironomidae, or midges, of Illinois, with particular reference to the species occurring in the Illinois River. *Bull. Ill. State Lab. Nat. Hist.* 10: 1-543.
- MALLOCH, J. R. 1919. The Diptera collected by the Canadian Expedition, 1913-1918, p. 34C-90C. In R. M. Anderson (ed.). *Report of the Canadian Arctic Expedition, 1913-18, Vol. 3. Pt. C, Diptera.* Taché, Ottawa.
- MOZLEY, S. C. 1970. Morphology and ecology of the larva of *Trisaccladius grandis* (Kieffer) (Diptera, Chironomidae) a common species in the lakes and rivers of northern Europe. *Arch. Hydrobiol.* 67: 433-451.
- OLIVER, D. R. 1971. Description of *Einfeldia synchrona* n. sp. (Diptera: Chironomidae). *Can. Entomol.* 103: 1591-1595.
- OLIVER, D. R. 1977. *Bicinctus*-Group of the genus *Cricotopus* van der Wulp (Diptera: Chironomidae) in the Nearctic with a description of a new species. *J. Fish. Res. Board Can.* 34: 99-111.
- PAGAST, S. 1933. Chironomidenstudien. *Steettin. Ent. Zeitig.* 94: 286-300.
- PANKRATOVA, V. YA. 1970. Larvae and pupae of midges of the subfamily Orthoclaadiinae of the fauna of the U.S.S.R. (Diptera, Chironomidae-Tendipedidae). *Inst. Akad. Nauk. SSSR.* 102: 1-343. (In Russian).
- REMPEL, J. G. 1936. The life-history and morphology of *Chironomus hyperboreus*. *J. Biol. Board Can.* 2: 209-221.
- ROBACK, S. S. 1953. Tendipedid larvae from the St. Lawrence River (Diptera: Tendipedidae). *Notulae Naturae Acad. Nat. Sci. Phila.* 235: 1-4.
- ROBACK, S. S. 1957. The immature tendipedids of the Philadelphia area (Diptera: Tendipedidae). *Monogr. Acad. Nat. Sci. Phila.* 9: 1-152.
- ROBACK, S. S. 1962. The male adult and immature stages of *Pentaneura pilosella* (Loew) (Diptera: Tendipedidae; Pelopiinae). *Entomol. News* 73: 253-258.

- 73: 253-258.
- ROBACK, S. S. 1963. The genus *Xenochironomus* (Diptera: Tendipedidae) Kieffer, taxonomy and immature stages. Trans. Am. Entomol. Soc. (Phila.) 88: 235-245.
- ROBACK, S. S. 1969. The immature stages of the genus *Tanytus* Meigen (Diptera: Chironomidae: Tanytoidinae). Trans. Am. Entomol. Soc. (Phila.) 94: 407-428.
- ROBACK, S. S. 1971. The adults of the subfamily Tanytoidinae (= Pelopiinae) in North America (Diptera: Chironomidae). Monogr. Acad. Nat. Sci. Phila. 17: 1-410.
- ROSENBERG, D. M., and N. B. SNOW. 1975. Ecological studies of aquatic organisms in the Mackenzie and Porcupine River drainages in relation to sedimentation. Can. Fish. Mar. Serv. Tech. Rep. 547: 86 p.
- ROSENBERG, D. M., and A. P. WIENS. 1976. Community and species responses of Chironomidae (Diptera) to contamination of fresh waters by crude oil and petroleum products, with special reference to the Trail River, Northwest Territories. J. Fish. Res. Board Can. 33: 1955-1963.
- ROSENBERG, D. M., A. P. WIENS, and O. A. SAETHER. 1977a. Life histories of *Cricotopus* (*Cricotopus*) *bicinctus* and *C. (C.) mackenziensis* in the Fort Simpson area, Northwest Territories. J. Fish. Res. Board Can. 34: 247-253.
- ROSENBERG, D. M., A. P. WIENS, and O. A. SAETHER. 1977b. Responses to crude oil contamination by *Cricotopus* (*Cricotopus*) *bicinctus* and *C. (C.) mackenziensis* (Diptera: Chironomidae) in the Fort Simpson area, Northwest Territories. J. Fish. Res. Board Can. 34: 254-261.
- SAETHER, O. A. 1969. Some Nearctic Podonominae, Diamesinae, and Orthocladiinae (Diptera: Chironomidae). Bull. Fish. Res. Board Can. 170: ix + 154 p.
- SAETHER, O. A. 1971. Notes on general morphology and terminology of the Chironomidae (Diptera). Can. Entomol. 103: 1237-1260.
- SAETHER, O. A. 1973. Taxonomy and ecology of three new species of *Monodiamesa* Kieffer, with keys to Nearctic and Palaearctic species of the genus (Diptera: Chironomidae). J. Fish. Res. Board Can. 30: 665-679.
- SAETHER, O. A. 1975a. Nearctic and Palaearctic *Heterotrissocladius* (Diptera: Chironomidae). Bull. Fish. Res. Board Can. 193: viii + 67 p.
- SAETHER, O. A. 1975b. Two new species of *Pro-tanytus* Kieffer, with keys to Nearctic and Palaearctic species of the genus (Diptera: Chironomidae). J. Fish. Res. Board Can. 32: 367-388.
- SAETHER, O. A. 1976. Revision of *Hydrobaenus*, *Trissocladius*, *Zalutschia*, *Paratrissocladius*, and some related genera (Diptera: Chironomidae). Bull. Fish. Res. Board Can. 195: vi + 287 p.
- SAETHER, O. A. 1977. Taxonomic studies on Chironomidae: *Nanocladius*, *Pseudochironomus*, and the *Harnischia* complex. Bull. Fish. Res. Board Can. 196: viii + 143 p.
- SCHLEE, D. 1968. Phylogenetic studies on Chironomidae (Dipt.). With special reference to the *Corynoneura* group. Ann. Zool. Fenn. 5: 130-138.
- SNOW, N. B., and D. M. ROSENBERG. 1975. The effects of crude oil on the colonization of artificial substrates by zoobenthos organisms. Can. Fish. Mar. Serv. Tech. Rep. 551: 35 p.
- SNOW, N. B., D. M. ROSENBERG, and J. MOENIG. 1975. The effects of Norman Wells crude oil on the zoobenthos of a northern Yukon stream one year after an experimental spill. Can. Fish. Mar. Tech. Rep. 550: 8 p.
- ŠULC, K. and ZAVŘEL, J. 1924. O epoikických a parazitických larvách Chironomidů. (Über epoikische und parasitische Chironomidenlarven). Acta Soc. Sci. Nat. Morav. 1: 353-391.
- THIENEMANN, A. 1937. Podonominae, eine neue Unterfamilie der Chironomiden. (Chironomiden aus Lappland I.). Mit einem Beitrag: F. W. Edwards. On the European Podonominae. Int. Rev. Gesamten Hydrobiol. Hydrogr. 35: 65-112.
- THIENEMANN, A. 1944. Bestimmungstabellen für die bis jetzt bekannten Larven und Puppen der Orthocladiinen (Diptera, Chironomidae). Arch. Hydrobiol. 39: 551-664.
- THIENEMANN, A., and F. KRÜGER. 1939. Terrestrische Chironomiden II. Zool. Anz. 127: 246-258.
- TOWNES, H. K. 1945. The nearctic species of Tendipedini [Diptera, Tendipedidae (= Chironomidae)]. Am. Midl. Nat. 34: 1-206.
- WEBB, D. W. 1969. New species of chironomids from Costello Lake, Ontario (Diptera: Chironomidae). J. Kans. Entomol. Soc. 42: 91-108.
- WEBB, D. W. 1972. The immature stages of *Chironomus aethiops* (Townes) with keys to the species of the known immature stages of the subgenus *Dicrotendipes* (Chironomidae: Diptera). Trans. Ill. State Acad. Sci. 65: 74-76.
- WIENS, A. P., D. M. ROSENBERG, and N. B. SNOW. 1975. Species list of aquatic plants and animals collected from the Mackenzie and Porcupine River watersheds from 1971-1973. Can. Fish. Mar. Serv. Tech. Rep. 557: 39 p.

LIST OF FIGURES

1. *Ablabesmyia* sp., lateral view of larva
2. *Chironomus* sp., lateral view of larva
3. *Pseudosmittia* sp., lateral view of larva
4. *Procladius* sp., ventral view of head capsule
5. *Chironomus* sp., ventral view of head capsule
6. *Micropectra* sp., ventral view of head capsule
7. *Cricotopus* (*Cricotopus*) sp., ventral view of head capsule
8. *Procladius* sp., paralabial plate
9. *Procladius* sp., ligula
10. *Procladius* sp., mandible
11. *Derotanyus alaskensis*, lateral setal fringe on abdominal segment IX
12. *Derotanyus alaskensis*, ligula and paraglossa
13. *Derotanyus alaskensis*, mandible
14. *Tanyus* sp., ligula
15. *Tanyus* sp., mandible
16. *Ablabesmyia* sp. 1, ligula
17. *Ablabesmyia* sp. 2, maxillary palpus
18. *Ablabesmyia illinoensis*, maxillary palpus and mandible
19. *Ablabesmyia* sp. 1, maxillary palpus and mandible
20. *Paramerina fragilis*, ligula
21. *Guttipeloplia guttipennis*, ligula
22. *Natarsia baltimorens*, ligula
23. *Labrundinia* sp. 1, ligula
24. *Nilotanyus fimbriatus*, ligula
25. *Larsia* sp. 1, ligula
26. *Larsia* sp. 1, mandible
27. *Thienemannimyia*-group, ligula
28. *Thienemannimyia*-group, mandible
29. *Trichotanyus* sp. 1, hypostomial plate
30. *Trichotanyus posticalis*, hypostomial plate
31. *Trichotanyus* sp. 1, mandible
32. *Lasiodiamea brusti*, procerci
33. *Lasiodiamea brusti*, hypostomial plate
34. *Chironomus* (*Chironomus*) *anthracinus*-group, hypostomial plate
35. *Chironomus* (*Chironomus*) *salinarius*-group, hypostomial plate
36. *Chironomus* (*Chironomus*) *plumosus*-group, hypostomial plate
37. *Chironomus* (*Chironomus*) *salinarius*-group, hypostomial plate
38. *Chironomus* (*Chironomus*) *plumosus*-group, distolateral projection on abdominal segment X
39. *Einfeldia* sp. 1, hypostomial plate
40. *Einfeldia* sp. 3, pecten epipharyngis
41. *Einfeldia synchrona*, oval depression on frontoclypeal apotome
42. *Lauterborniella agrayloides*, hypostomial plate
43. *Lauterborniella agrayloides*, protuberance on abdominal segment XI
44. *Lauterborniella agrayloides*, plumose setae posterior to paralabial plates
45. *Pseudochironomus fulviventrif*, hypostomial plate and paralabial plates
46. *Xenochironomus* sp. 1, hypostomial plate and paralabial plates
47. *Robackia demijerei*, hypostomial plate and paralabial plates
48. *Pagastiella ostansa*, hypostomial plate
49. *Pagastiella ostansa*, projection on head capsule dorsal to antennal base
50. *Demicryptochironomus* sp. 1, hypostomial plate
51. *Cryptochironomus digitatus*, hypostomial plate
52. *Cryptochironomus digitatus*, SI
53. *Acalcarella* sp. 1, hypostomial plate
54. *Saetheria tylus*, hypostomial plate
55. *Paracladopelma* sp. 1, hypostomial plate
56. *Harnischia curtilamellata*, hypostomial plate
57. *Parachironomus* sp. 1, hypostomial plate
58. *Parachironomus* sp. 1, paralabial plate
59. *Cladopelma* sp. 1, hypostomial plate
60. *Cryptotendipes* sp. 1, hypostomial plate
61. *Cryptotendipes* sp. 2, hypostomial plate
62. *Cryptotendipes* sp. 2, paralabial plate
63. *Stictochironomus* spp., hypostomial plate
64. *Stictochironomus* sp. 3, hypostomial plate
65. *Paralauterborniella nigrohalteralis*, hypostomial plate
66. *Microtendipes pedellus*, hypostomial plate
67. *Microtendipes pedellus*, SI
68. *Paratendipes* sp. 2, hypostomial plate
69. *Stenochironomus* sp. 1, hypostomial plate
70. *Dicortendipes nervosus*, hypostomial plate
71. *Dicortendipes* sp. 1, hypostomial plate
72. *Dicortendipes* sp. 1, SI
73. *Dicortendipes* sp. 1, paralabial plate
74. *Glyptotendipes* (*Glyptotendipes*) *dreisbachi*, hypostomial plate
75. *Glyptotendipes* (*Phytotendipes*) sp. 3, hypostomial plate
76. *Glyptotendipes* (*Phytotendipes*) sp. 3, paralabial plate
77. *Polypedilum* (*Polypedilum*) *nubeculosum*, hypostomial plate and paralabial plates
78. *Polypedilum* (*Polypedilum*) *laetum*, hypostomial plate
79. *Polypedilum* (*Tripodura*) sp. 1, hypostomial plate
80. *Polypedilum* (*Polypedilum*) *illinoense*, hypostomial plate
81. *Polypedilum* (*Polypedilum*) *ophioides*, hypostomial plate and paralabial plates
82. *Endochironomus* sp. 1, hypostomial plate
83. *Endochironomus* sp. 1, paralabial plate
84. *Endochironomus* sp. 1, mandible
85. *Phaenopsectra* sp. 1, hypostomial plate
86. *Phaenopsectra* sp. 1, paralabial plate
87. *Phaenopsectra* sp. 2, hypostomial plate
88. *Phaenopsectra* sp. 2, paralabial plate
89. *Stempellinella* sp. 1, hypostomial plate and paralabial plates
90. *Stempellinella* sp. 1, antenna showing Lauterborn organs
91. *Stempellina* sp. 3, hypostomial plate and paralabial plates
92. *Stempellina* sp. 3, procerci
93. *Stempellina* sp. 1, antennal tubercle with apicomesal palmate projection
94. *Stempellina* sp. 2, antennal tubercle with apicomesal palmate projection
95. *Constempellina* sp. 2, hypostomial plate and paralabial plates
96. *Constempellina* sp. 2, antennal tubercle showing apicomesal projection
97. *Constempellina* sp. 2, plumose setae on frontoclypeal apotome
98. *Corynocera* sp. 1, hypostomial plate
99. *Corynocera* sp. 1, mandible
100. *Rheotanytarsus* sp. 1, hypostomial plate and paralabial plates
101. *Rheotanytarsus* sp. 1, pecten epipharyngis
102. *Paratanytarsus* sp. 1, hypostomial plate and paralabial plates
103. *Paratanytarsus* sp. 1, pecten epipharyngis
104. *Paratanytarsus* sp. 2, pecten epipharyngis
105. *Cladotanytarsus* sp. 1, hypostomial plate and paralabial plates
106. *Cladotanytarsus* sp. 2, hypostomial plate and paralabial plates
107. *Cladotanytarsus* sp. 3, hypostomial plate and paralabial plates
108. *Cladotanytarsus* sp. 2, pecten epipharyngis
109. *Micropectra* sp. 1, hypostomial plate and paralabial plates

110. *Micropectra* sp. 1, apex of antennal tubercle showing apicomesal projection
111. *Micropectra* sp.2, hypostomial plate and paralabial plates
112. *Micropectra* sp.3, hypostomial plate and paralabial plates
113. *Tanytarsus* sp. 1, hypostomial plate and paralabial plates
114. *Tanytarsus* sp. 2, hypostomial plate and paralabial plates
115. *Tanytarsus* sp. 3, hypostomial plate and paralabial plates
116. *Corynoneura* sp. 1, hypostomial plate
117. *Corynoneura* sp. 4, hypostomial plate
118. *Corynoneura* sp. 5, hypostomial plate
119. *Corynoneura* sp. 1, ventro-basal plumose seta on posterior proleg
120. *Corynoneura* sp. 1, 4-segmented antenna
121. *Corynoneura* sp. 2, 4-segmented antenna
122. *Thienemanniella* sp. 1, hypostomial plate
123. *Thienemanniella* sp. 2, hypostomial plate
124. *Thienemanniella* sp. 3, hypostomial plate
125. *Thienemanniella* sp. 3, 5-segmented antenna
126. *Krenosmittia* sp. 1, hypostomial plate
127. *Nanocladius* (*Nanocladius*) sp. 1, hypostomial plate and paralabial plates
128. *Rheocricotopus* sp. 1, hypostomial plate and paralabial plates
129. *Rheocricotopus* sp. 2, hypostomial plate and paralabial plates
130. *Rheocricotopus* sp. 2, paralabial plate with setae
131. *Rheocricotopus* sp. 2, spur on procercus
132. *Psectrocladius* sp. 3, SI
133. *Psectrocladius* sp. 1, mandible
134. *Psectrocladius* sp. 1, hypostomial plate and paralabial plates
135. *Psectrocladius* sp. 3, hypostomial plate
136. *Psectrocladius* sp. 4, hypostomial plate and paralabial plates
137. *Psectrocladius simulans*, premandibles
138. *Psectrocladius simulans*, procerci with short spurs
139. *Psectrocladius* sp. 1, premandible
140. *Psectrocladius* sp. 1, procercus with bifid spur
141. *Epoicocladius flavens*, hypostomial plate
142. *Epoicocladius flavens*, mandible
143. *Eukiefferiella* sp. 1, hypostomial plate
144. *Eukiefferiella* sp. 7, hypostomial plate
145. *Eukiefferiella paucunoa*, hypostomial plate
146. *Eukiefferiella* sp. 4, hypostomial plate
147. *Eukiefferiella claripennis*, hypostomial plate
148. *Eukiefferiella* sp. 6, hypostomial plate
149. *Eukiefferiella paucunoa*, mandible
150. *Synorthocladius* sp. 1, hypostomial plate
151. *Cricotopus* (*Cricotopus*) *mackenziensis*, hypostomial plate
152. *Cricotopus* (*Cricotopus*) *bicinctus*, hypostomial plate
153. *Cricotopus* (*Cricotopus*) *bicinctus*, mandible
154. *Cricotopus* (*Cricotopus*) *tremulus*-group, hypostomial plate
155. *Cricotopus* (*Cricotopus*) *tremulus*-group, hypostomial plate
156. *Cricotopus* (*Cricotopus*) *festivellus*-group, hypostomial plate
157. *Cricotopus* (*Cricotopus*) *festivellus*-group, hypostomial plate
158. *Cricotopus* (*Cricotopus*) *festivellus*-group, plumose setae on abdominal segment VI
159. *Cricotopus* (*Cricotopus*) *festivellus*-group, pecten epipharyngis and SI
160. *Cricotopus* (*Cricotopus*) *cylindraceus*-group, hypostomial plate
161. *Cricotopus* (*Isocladius*) *sylvestris*-group, hypostomial plate
162. *Cricotopus* (*Isocladius*) *sylvestris*-group, hypostomial plate
163. *Cricotopus* (*Isocladius*) *laricomalis*-group, hypostomial plate
164. *Cricotopus* (*Isocladius*) *laricomalis*-group, hypostomial plate
165. *Cricotopus* (*Isocladius*) *laricomalis*-group, pecten epipharyngis
166. *Orthocladius* (*Pogonocladius*) sp. 1, hypostomial plate
167. *Orthocladius* (*Euorthocladius*) sp. 1, hypostomial plate
168. *Orthocladius* (*Euorthocladius*) sp. 2, hypostomial plate
- 169-174. *Cricotopus* (*Cricotopus*) or *Orthocladius* (*Orthocladius*), hypostomial plates
175. *Brillia* sp. 1, pectinate labral lobes
176. *Brillia* sp. 1, hypostomial plate
177. *Eurycnemus* sp. 1, hypostomial plate
178. *Diploccladius cultriger*, paralabial plate with long setae
179. *Diploccladius cultriger*, hypostomial plate
180. *Diploccladius cultriger*, SI
181. *Parametriocnemus graminicola*, premandibles
182. *Parametriocnemus graminicola*, hypostomial plate
183. *Paraphaenocladius* sp. 1, hypostomial plate
184. *Paraphaenocladius* sp. 1, antenna and mandible
185. *Paraphaenocladius* sp. 2, antenna and mandible
186. *Parakiefferiella* sp. 1, hypostomial plate
187. *Heterotriassocladius changi*, hypostomial plate
188. *Zalutschia* sp. 1, hypostomial plate
189. *Zalutschia* sp. 1, SI
190. *Hydrobaenus* sp. 1, hypostomial plate
191. *Hydrobaenus* sp. 1, SI
192. *Symbiocladius equitans*, hypostomial plate
193. *Pseudosmittia*-group, hypostomial plate
194. *Smittia*-group, hypostomial plate
195. *Smittia*-group, SI
196. *Protanypus* sp. 1, hypostomial plate
197. *Protanypus* sp. 1, head capsule
198. *Potthastia longimanus*, hypostomial plate
199. *Potthastia* sp. 3, hypostomial plate
200. *Monodiamesa bathyphila*, hypostomial plate
201. *Monodiamesa bathyphila*, paralabial plate with setae
202. *Diamesa* sp. 1, hypostomial plate
203. *Diamesa* sp. 2, hypostomial plate
204. *Diamesa* sp. 3, hypostomial plate
205. *Diamesa* sp. 3, premandible
206. *Diamesa* sp. 3, antenna with annulated third segment
207. *Diamesa* sp. 4, hypostomial plate



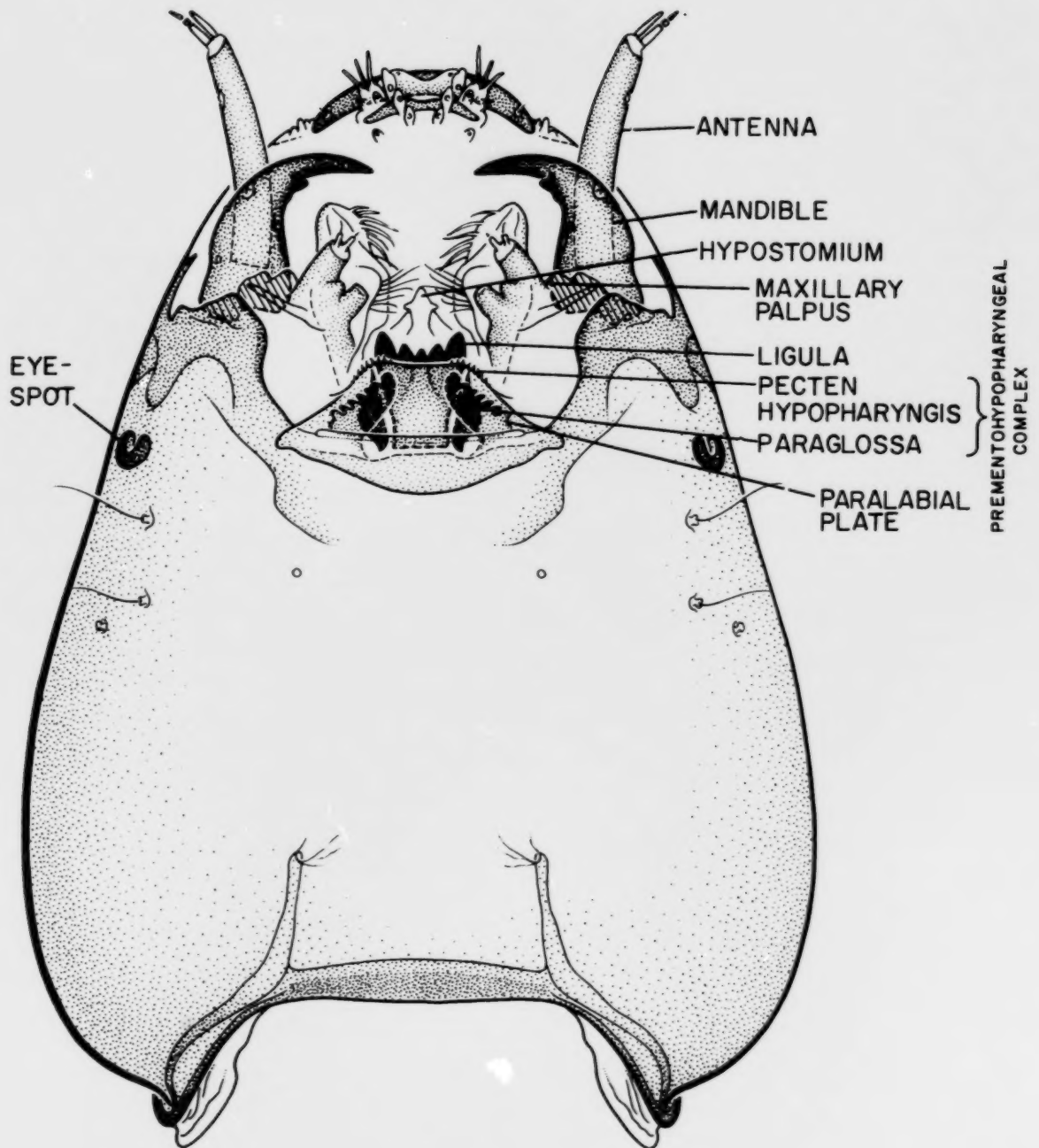


Fig. 4

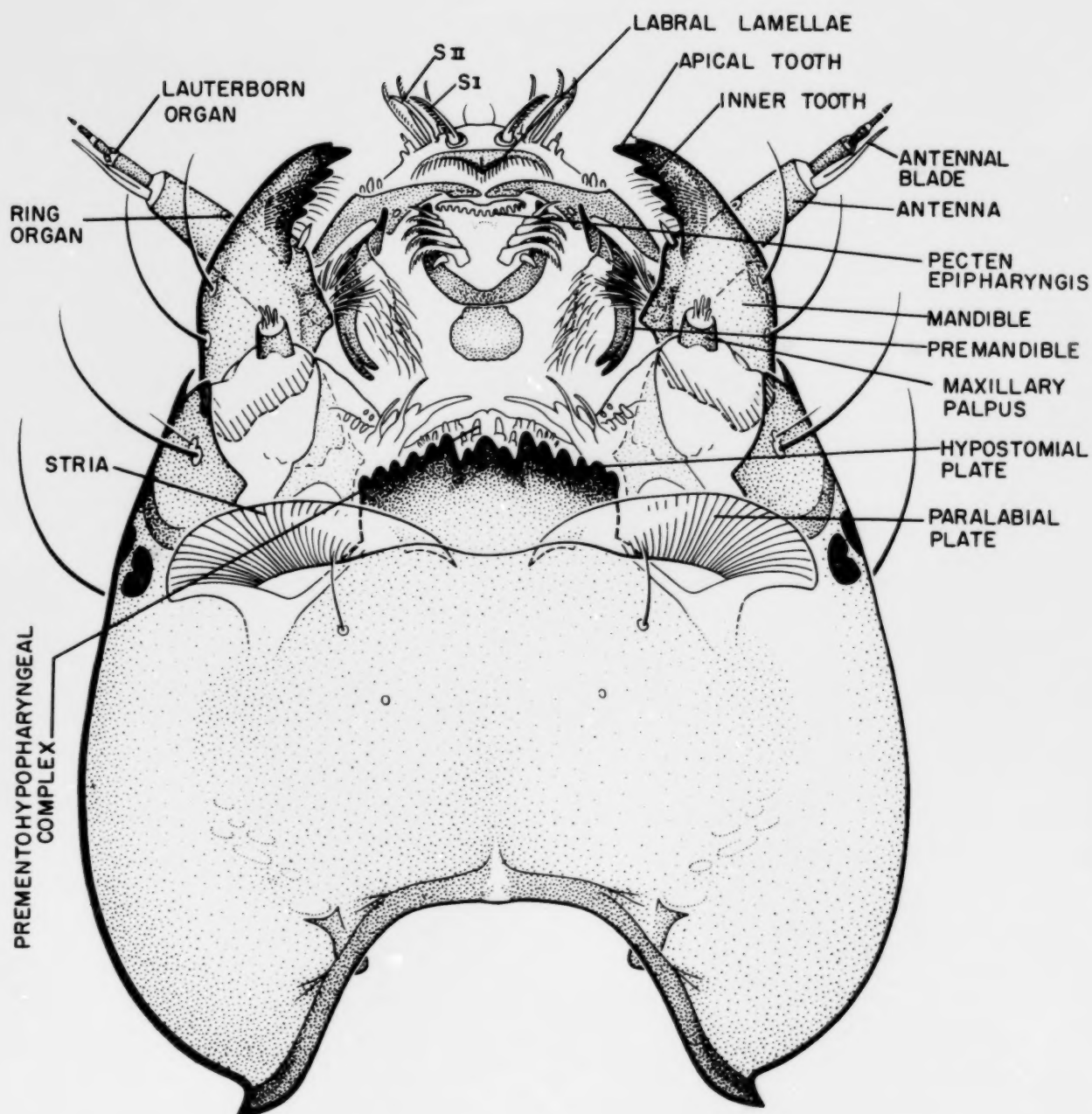


Fig. 5

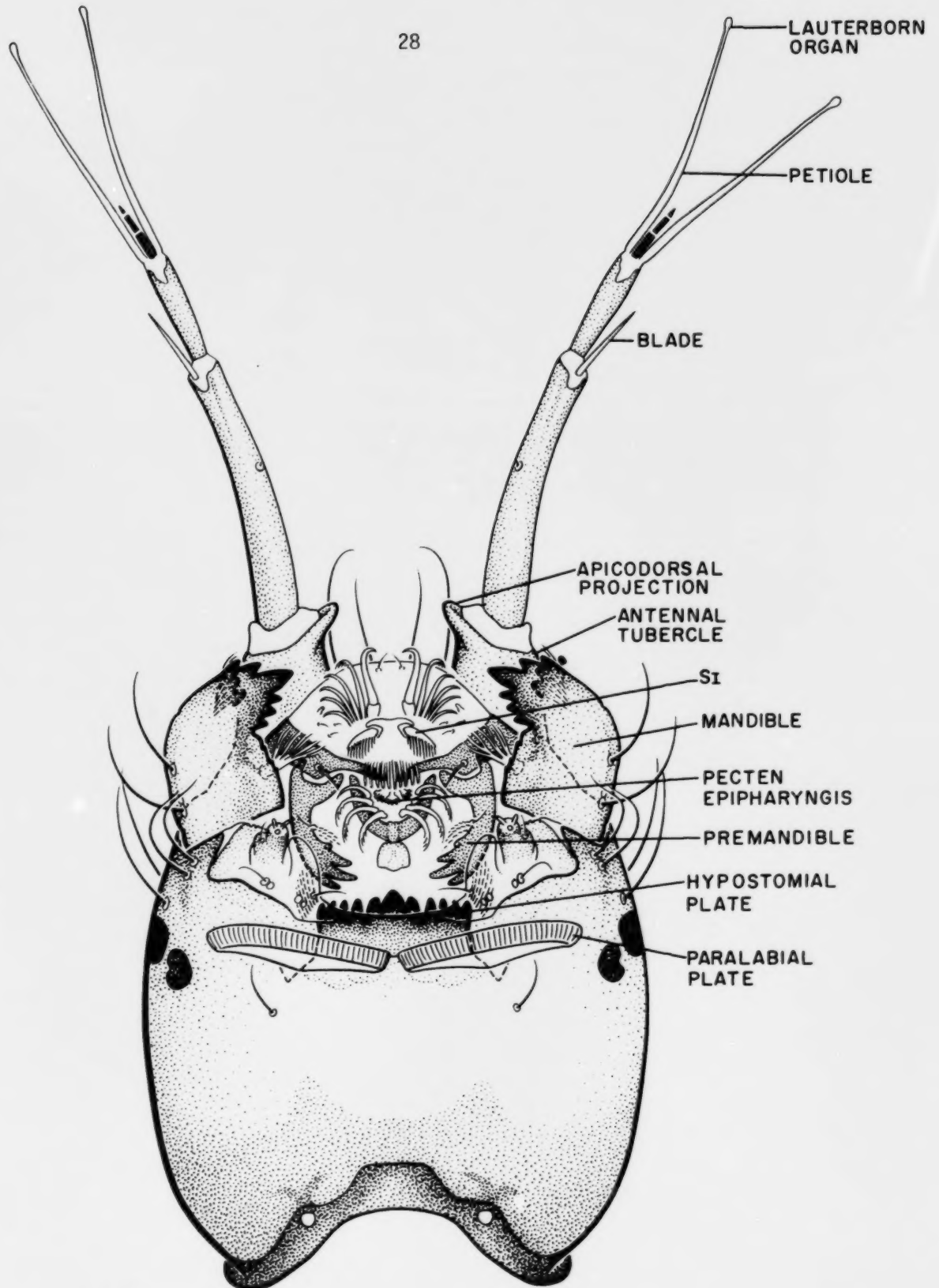


Fig. 6

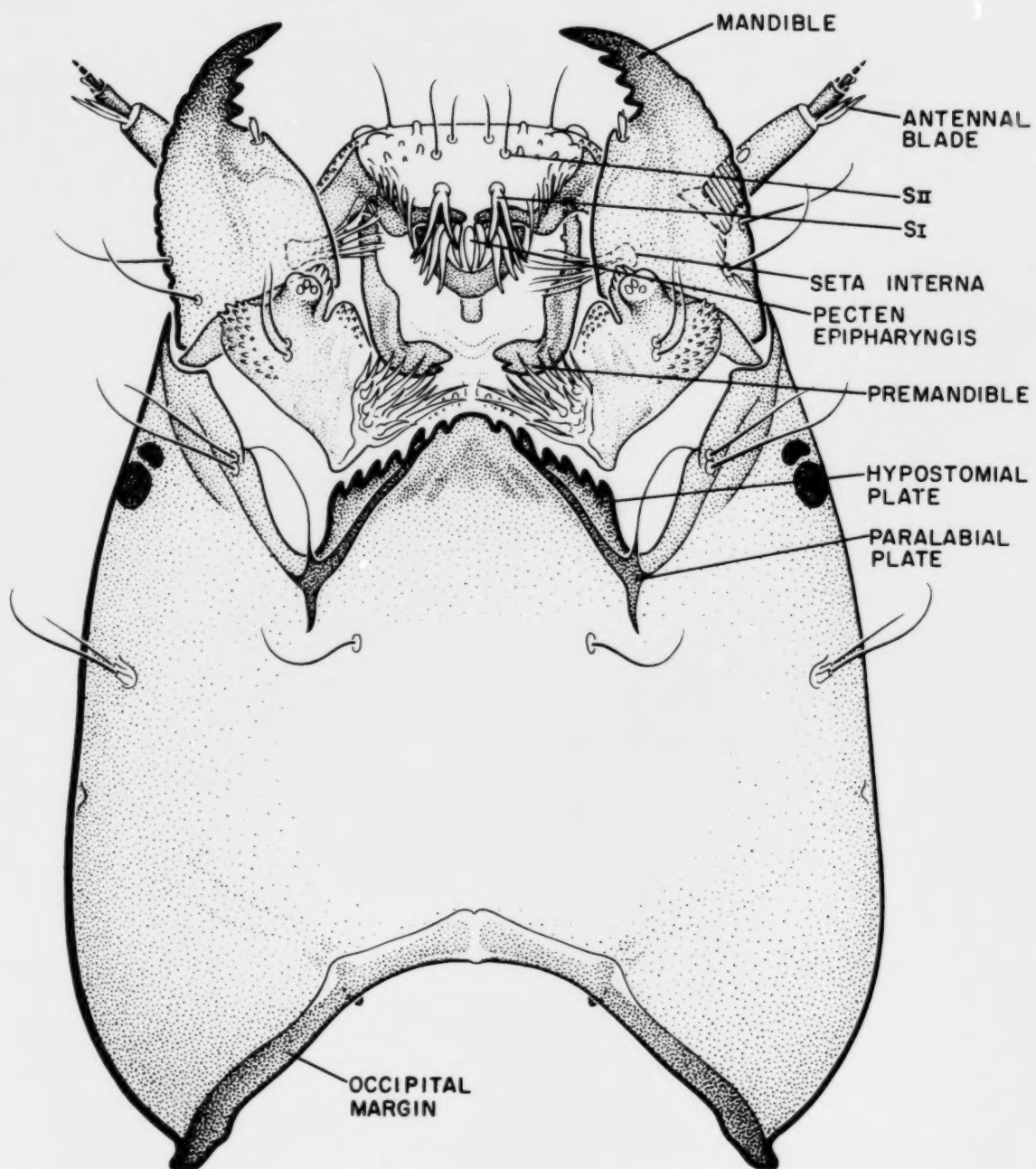


Fig. 7



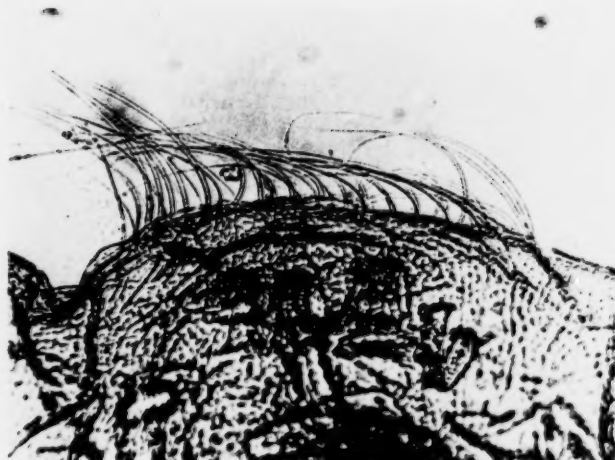
8



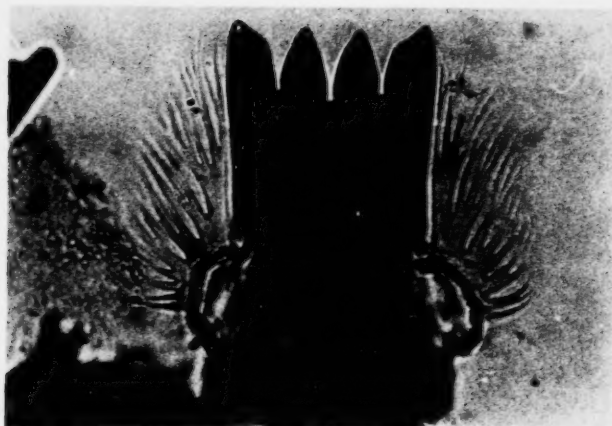
9



10



11



12



13



14



15



16



17



18



19



20



21



22



23



24



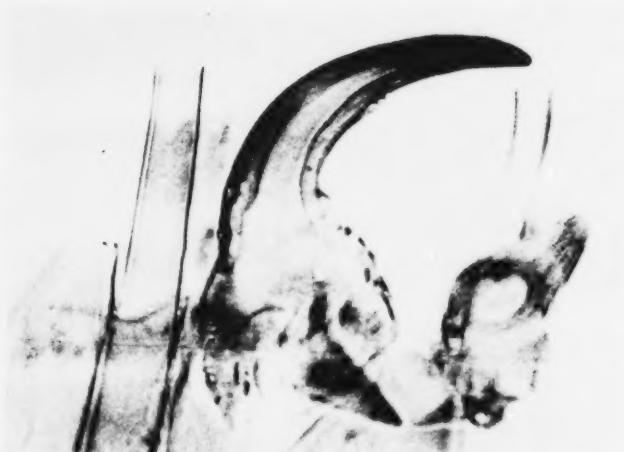
25



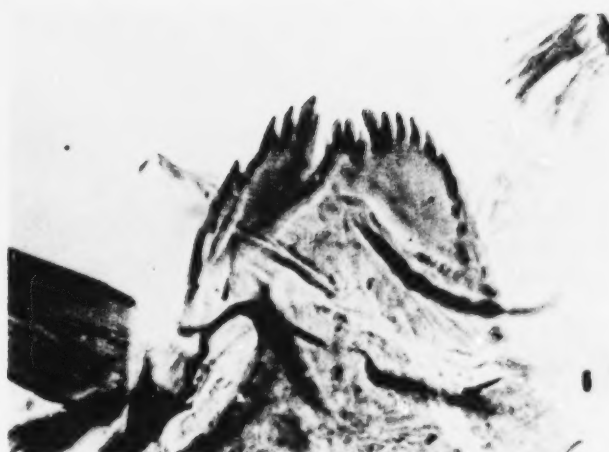
26



27



28



29



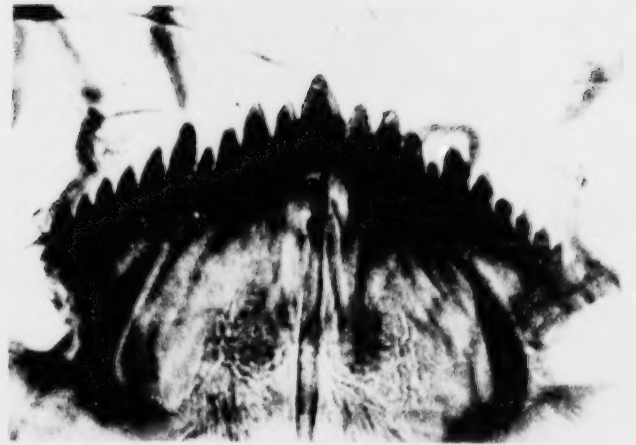
30



31

34

32



33



34



35



36



37



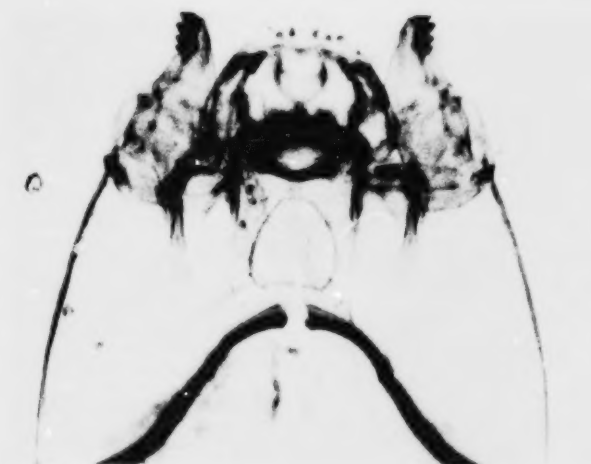
38



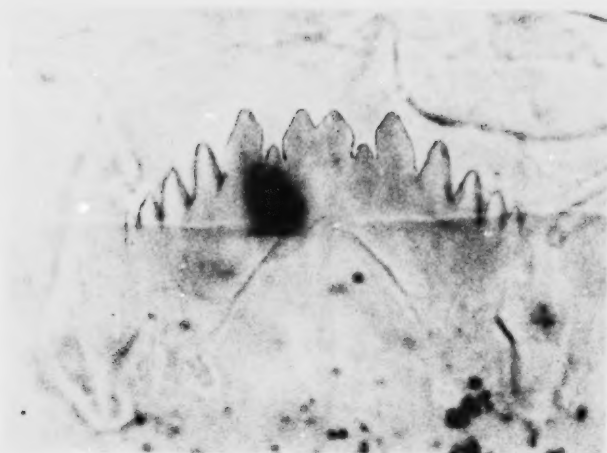
39



40



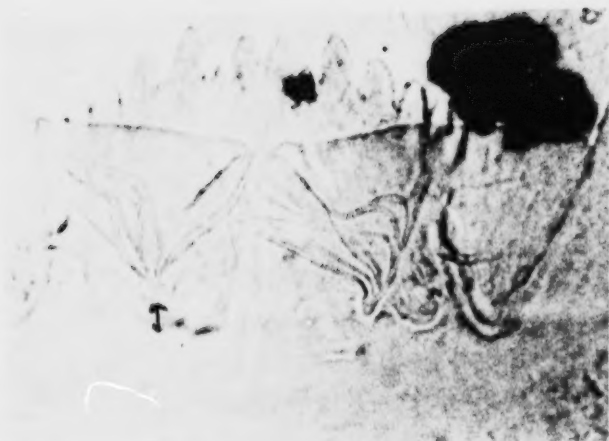
41



42



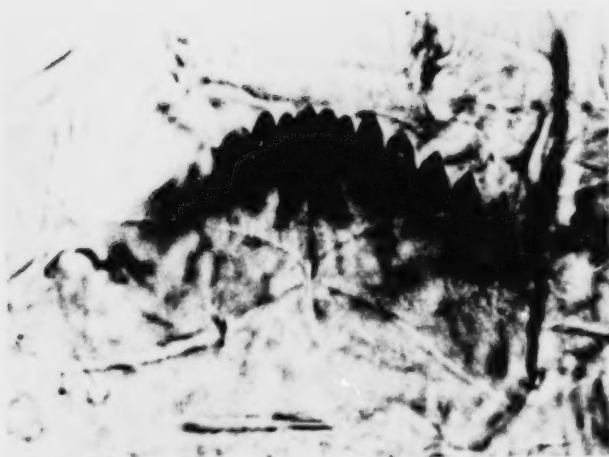
43



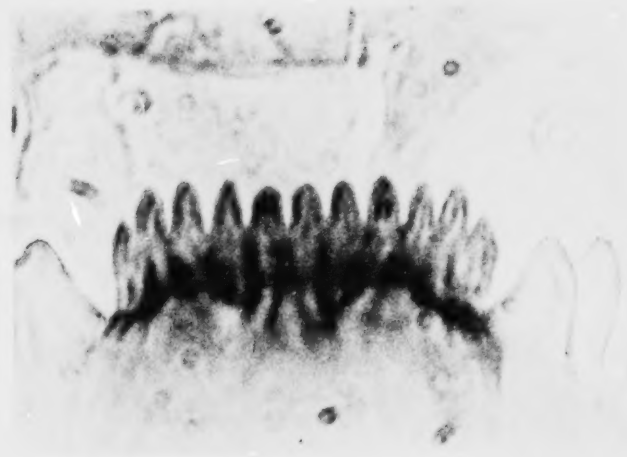
44



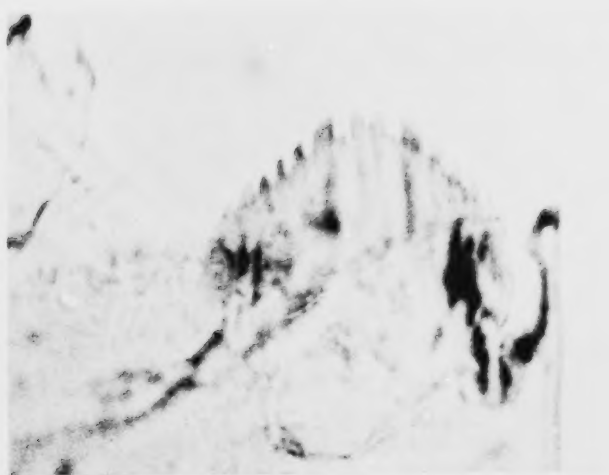
45



46



47



48



49



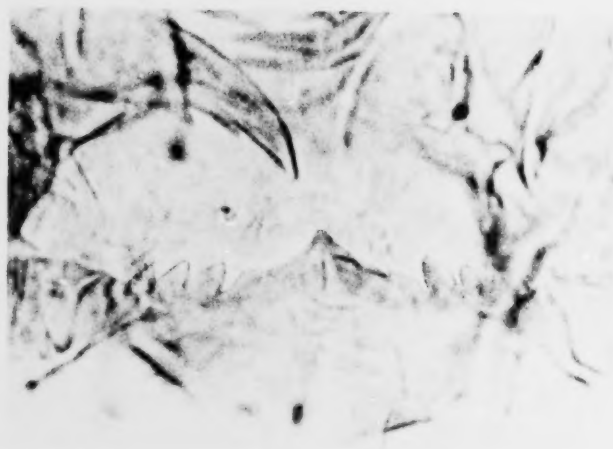
50



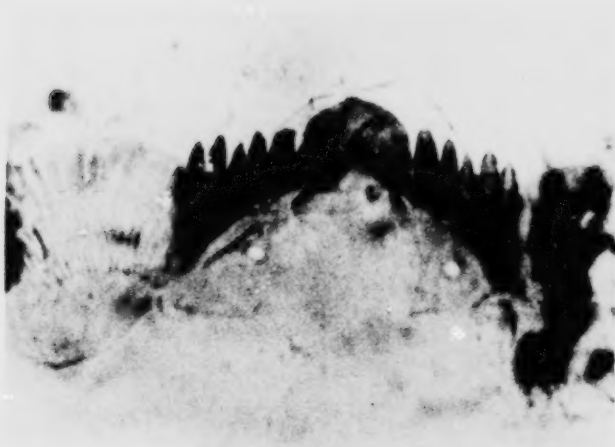
51



52



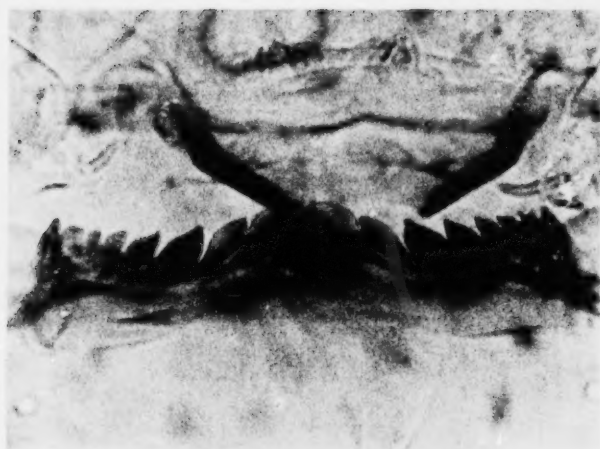
53



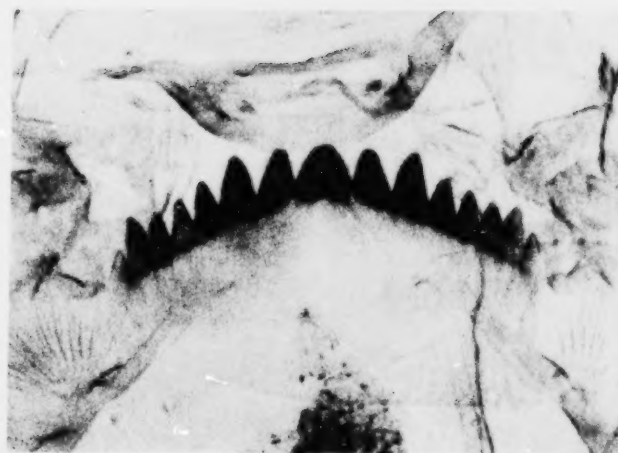
54



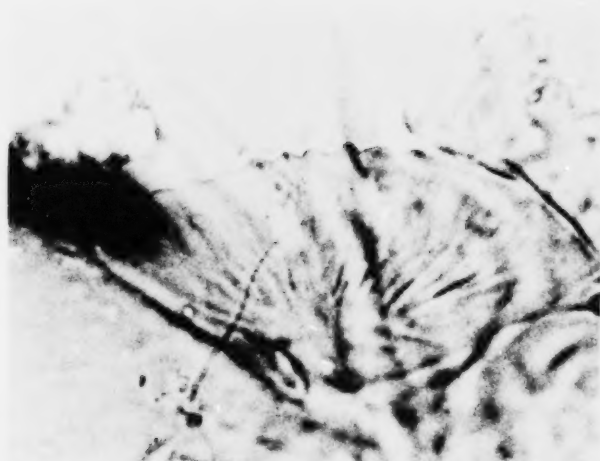
55



56



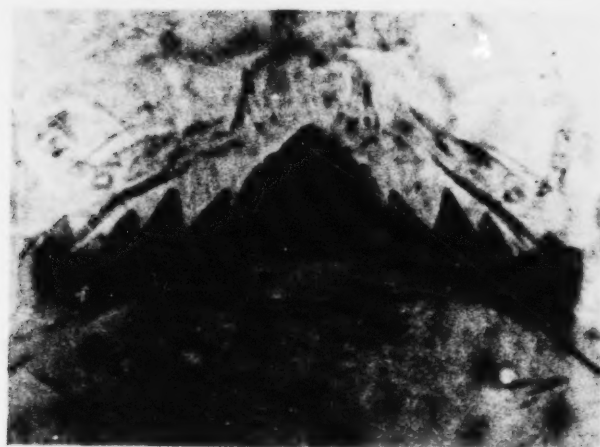
57



58



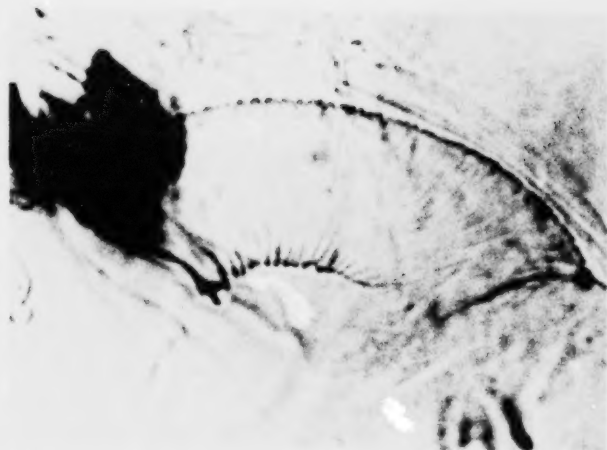
59



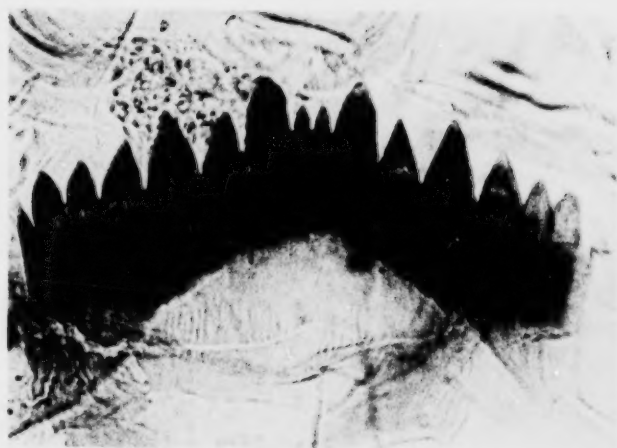
60



61



62



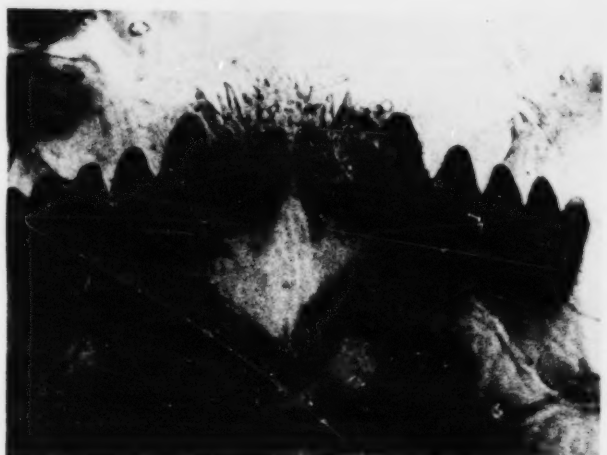
63



64



65



66



67



68



69



70



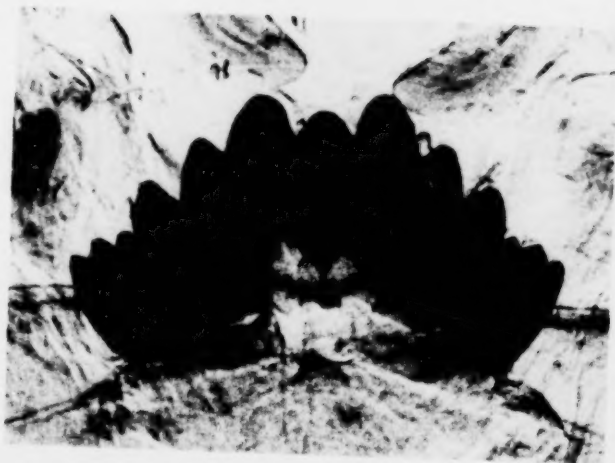
71



72



73



74



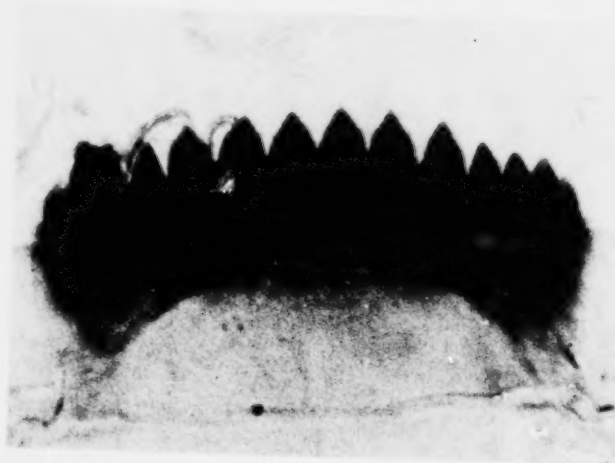
75



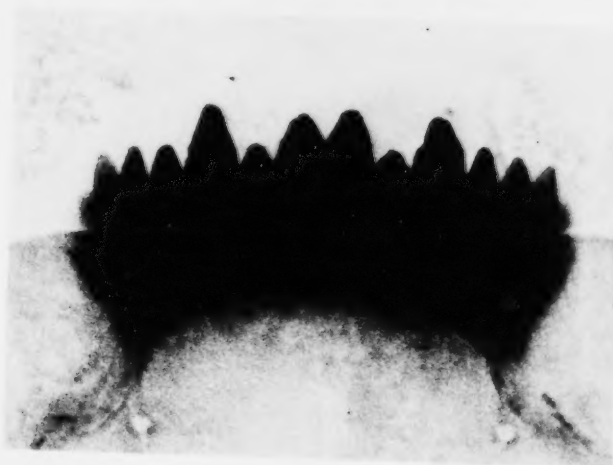
76



77



78



79

42



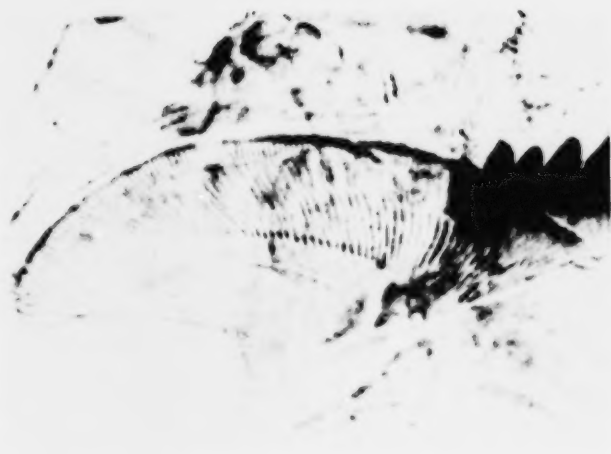
80



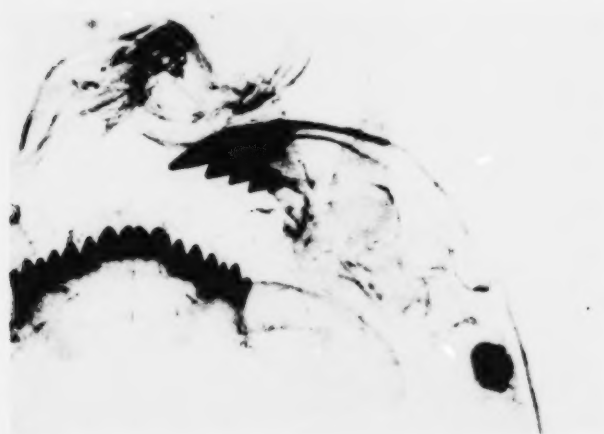
81



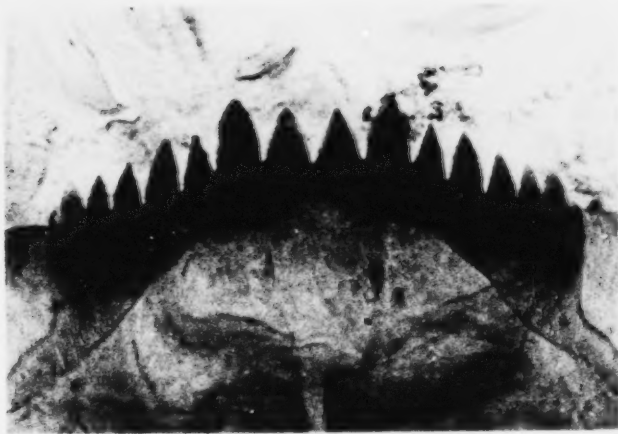
82



83



84



85



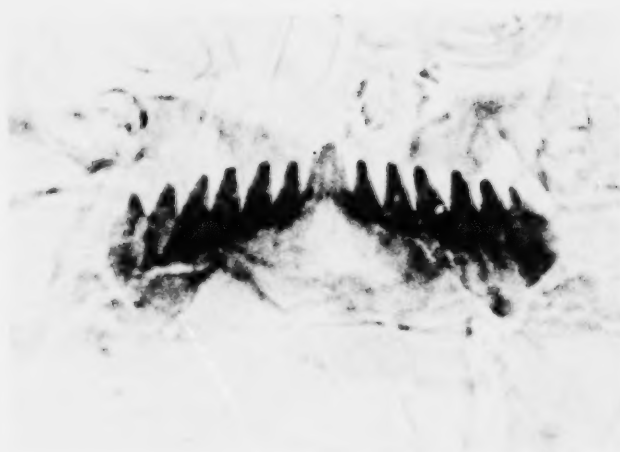
86



87



88



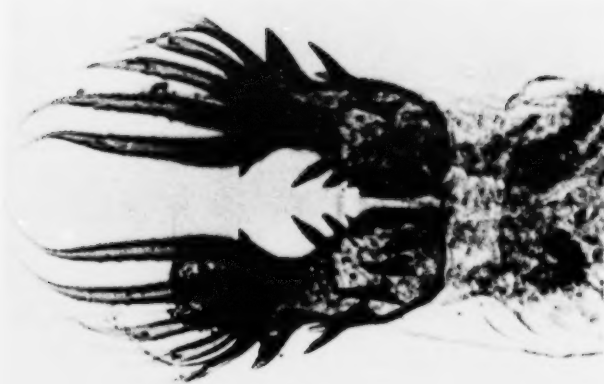
89



90



91



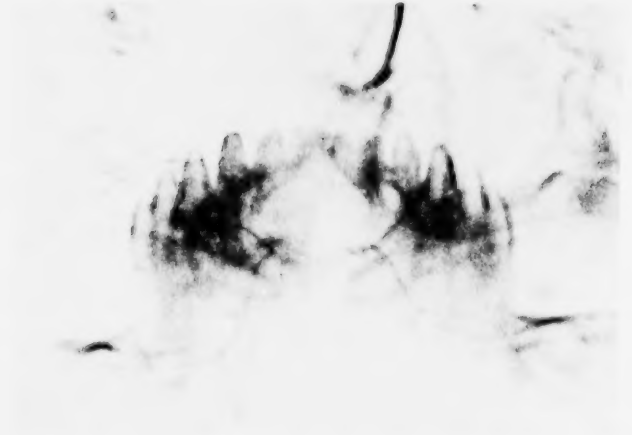
92



93



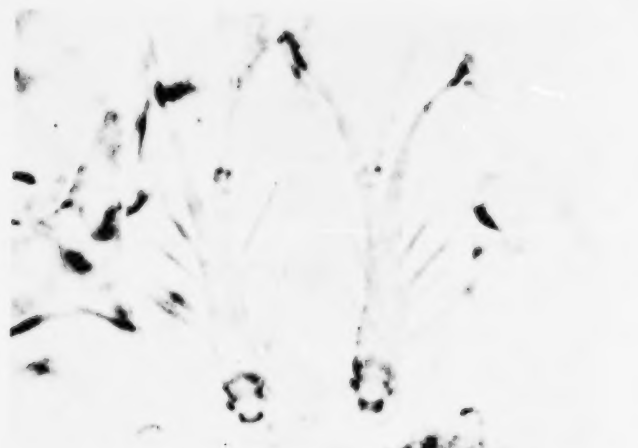
94



95



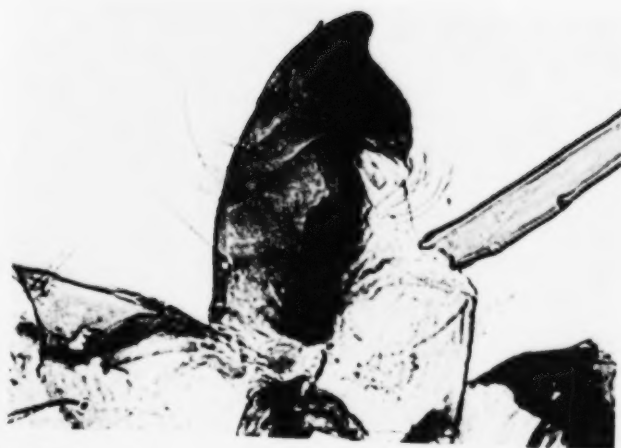
96



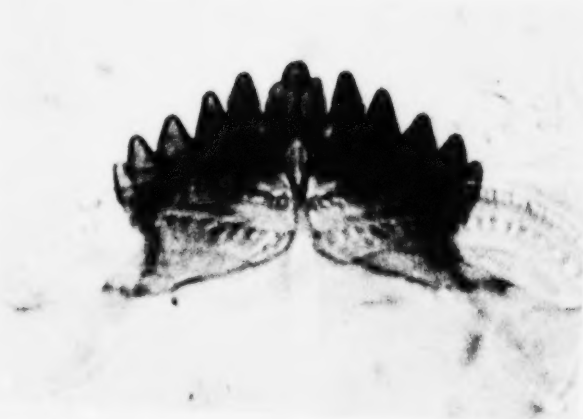
97



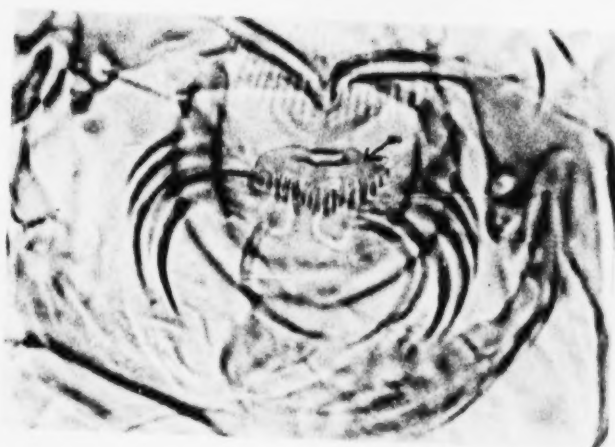
98



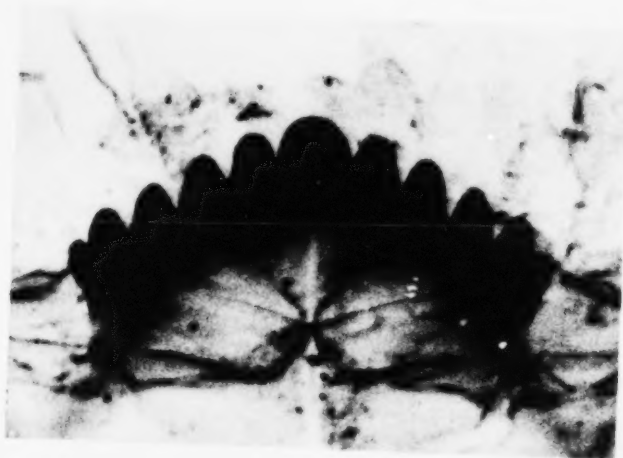
99



100



101



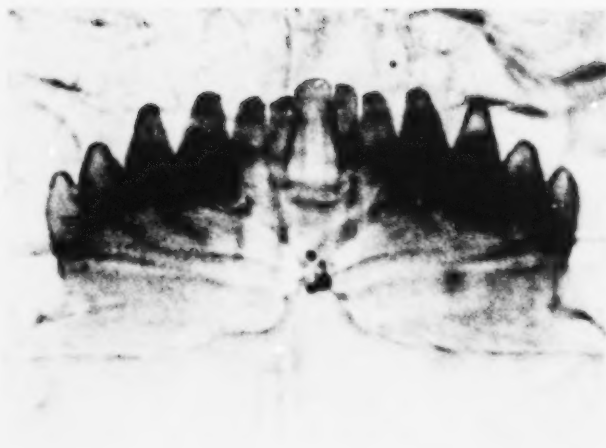
102



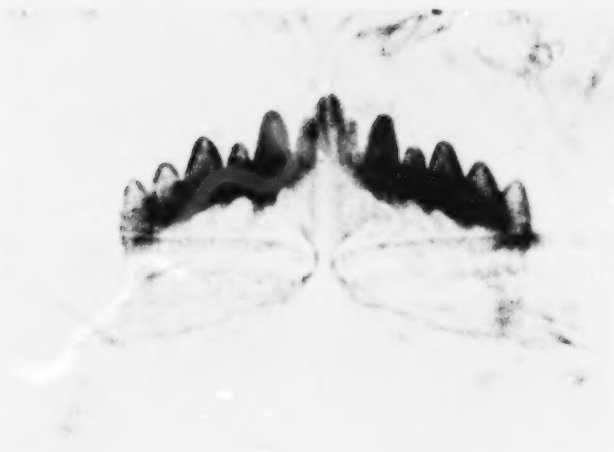
103



104



105



106



107



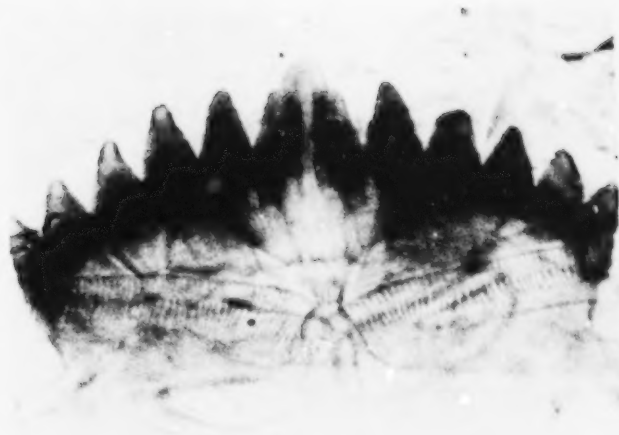
108



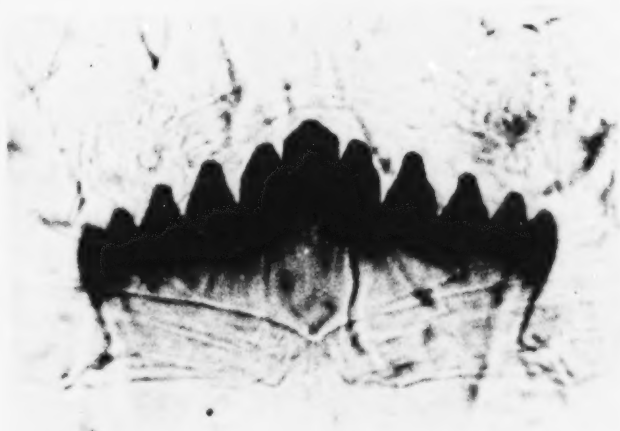
109



110



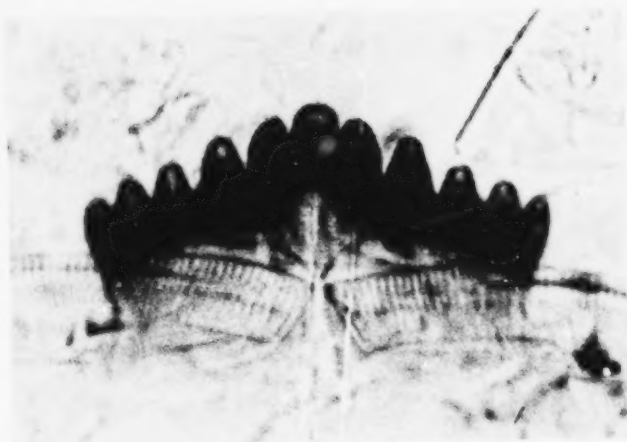
111



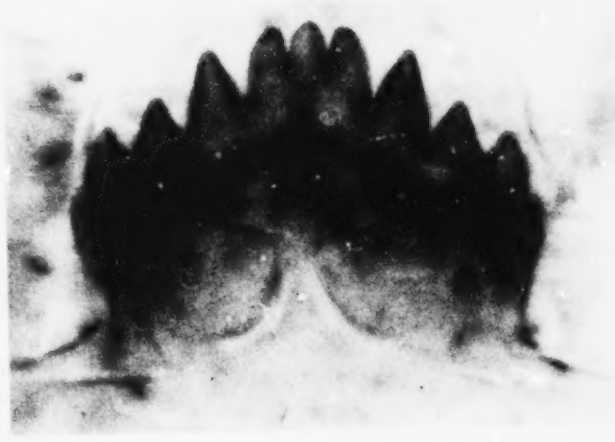
112



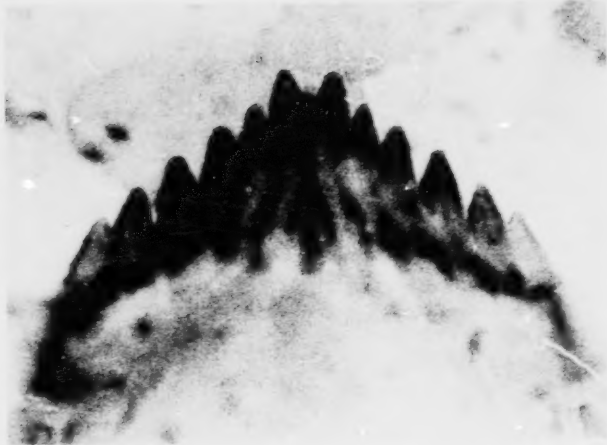
113



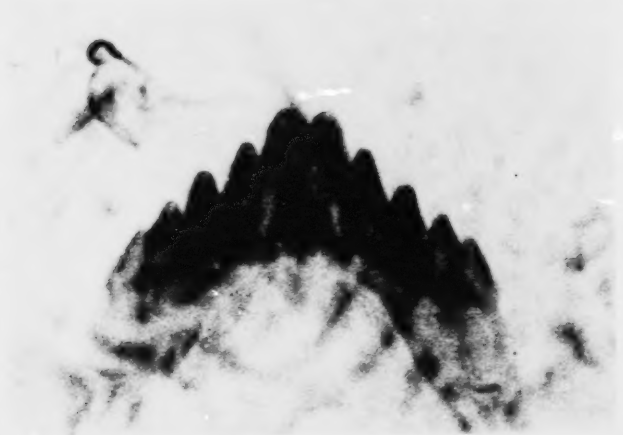
114



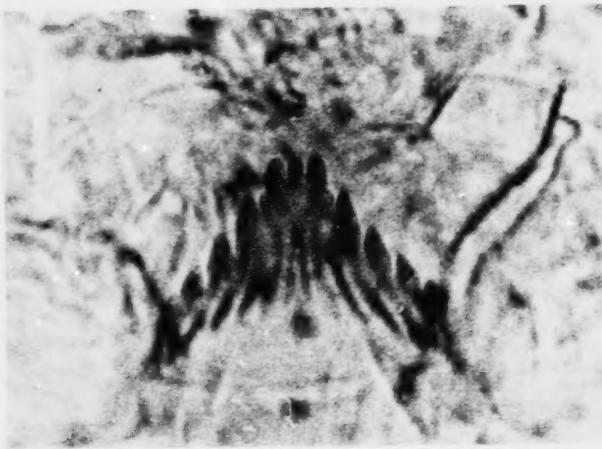
115



116



117



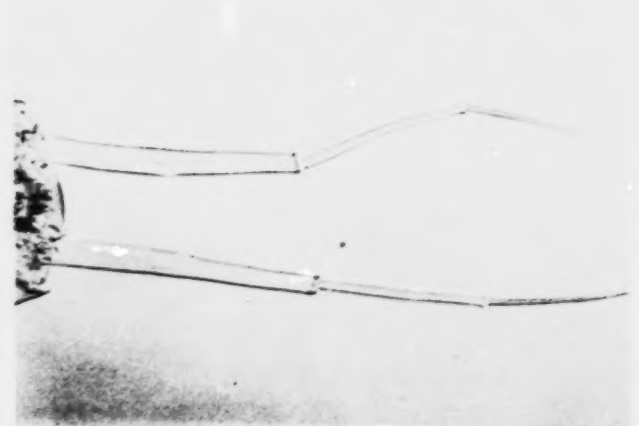
118



119



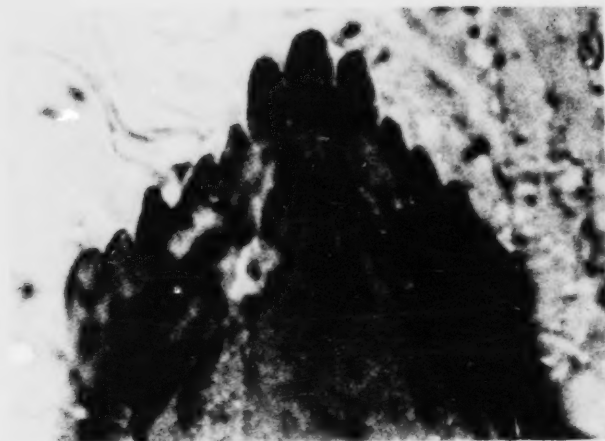
120



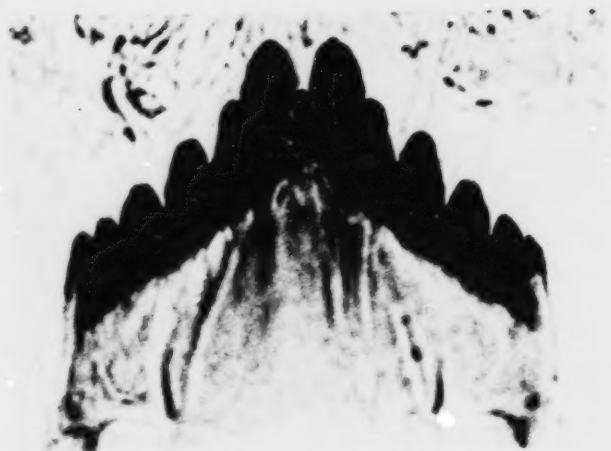
121



122



123



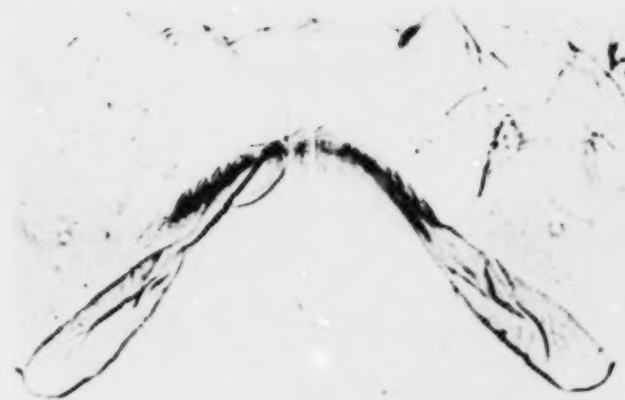
124



125



126



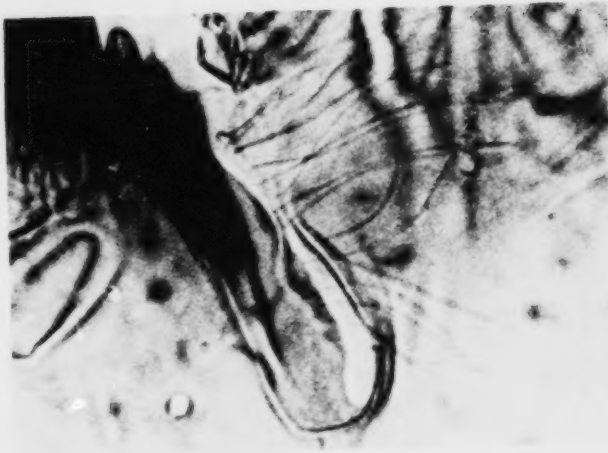
127



128



129



130



131



132



133



134



135



136



137



138



139



140



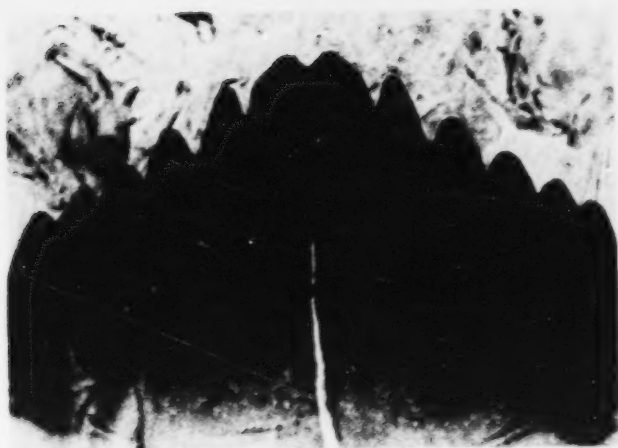
141



142



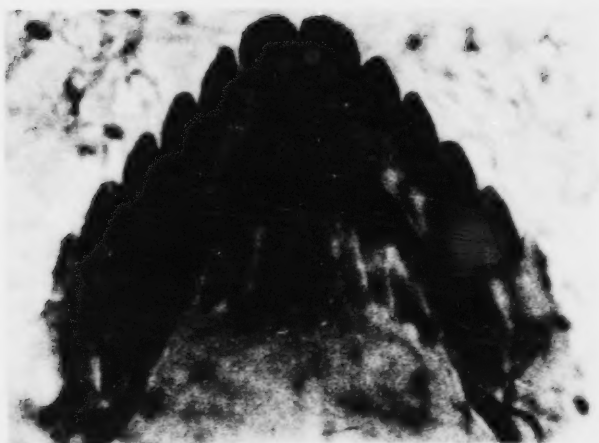
143



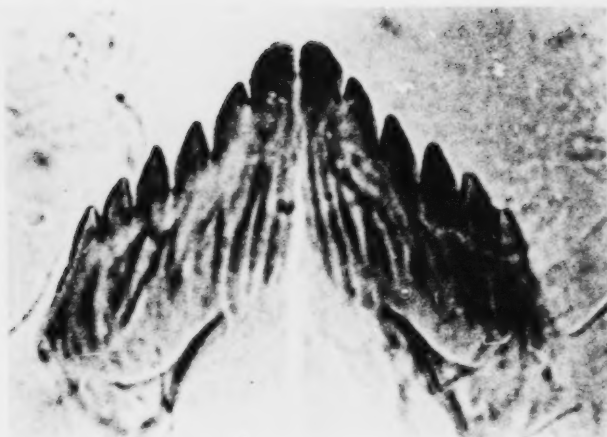
144



145



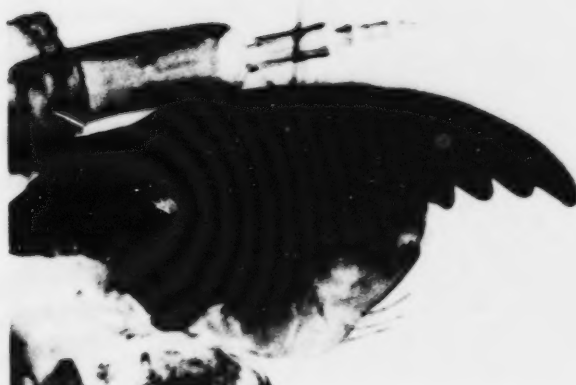
146



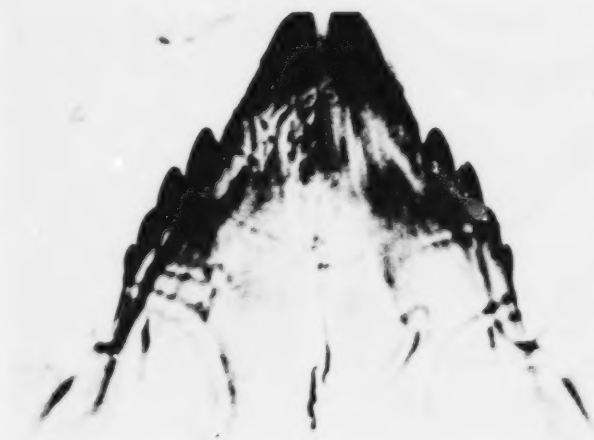
147



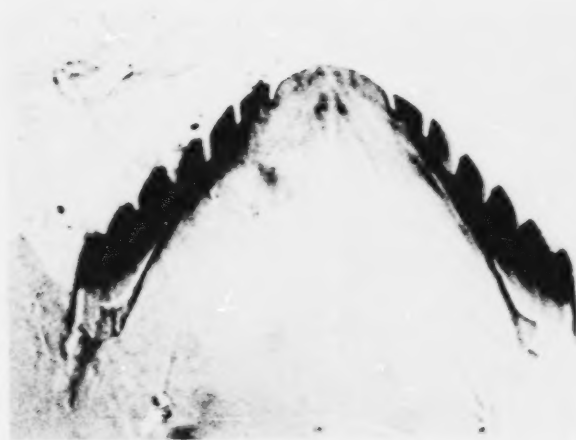
148



149



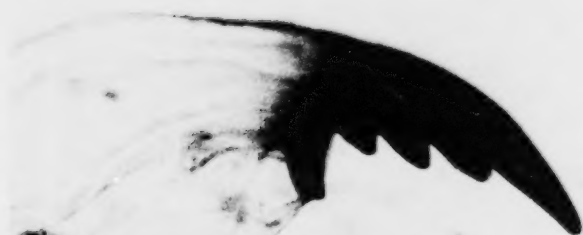
150



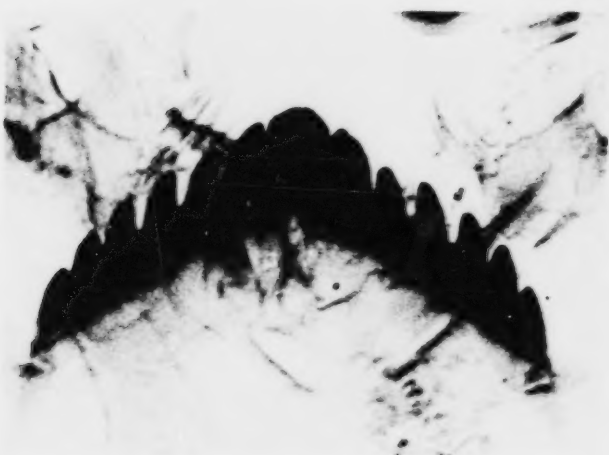
151



152



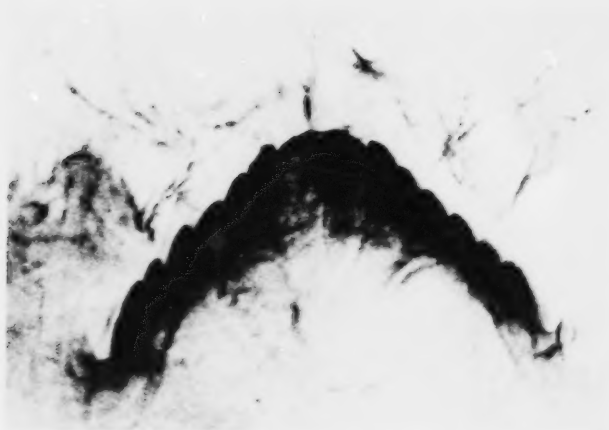
153



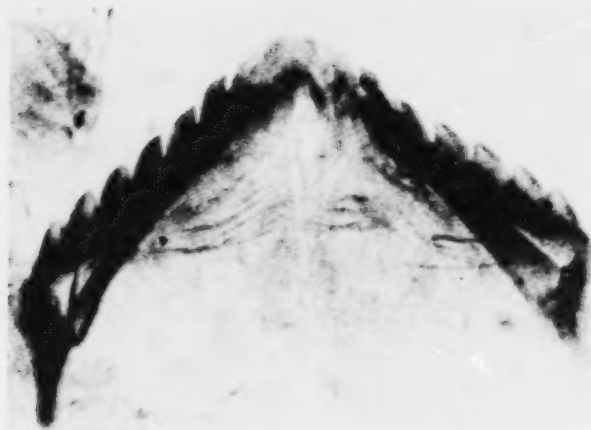
154



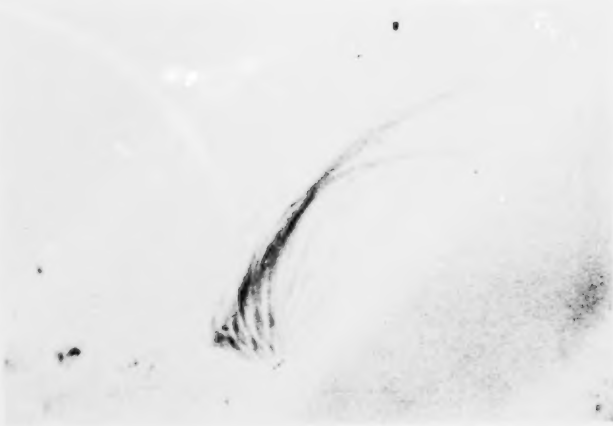
155



156



157



158



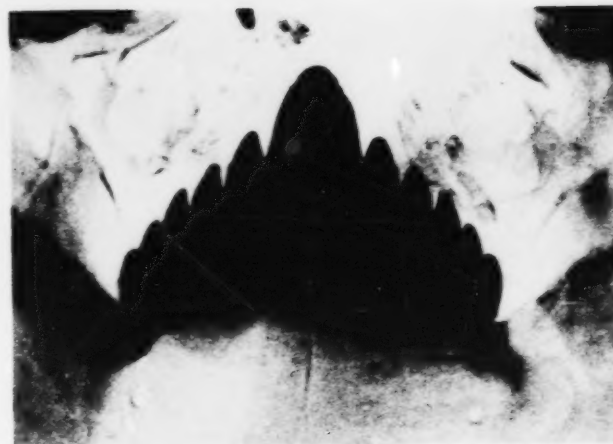
159



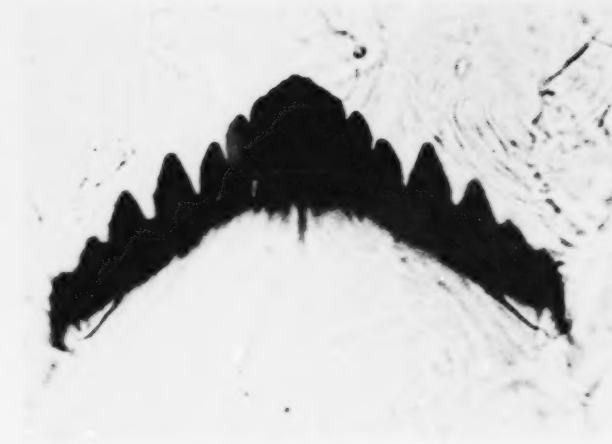
160



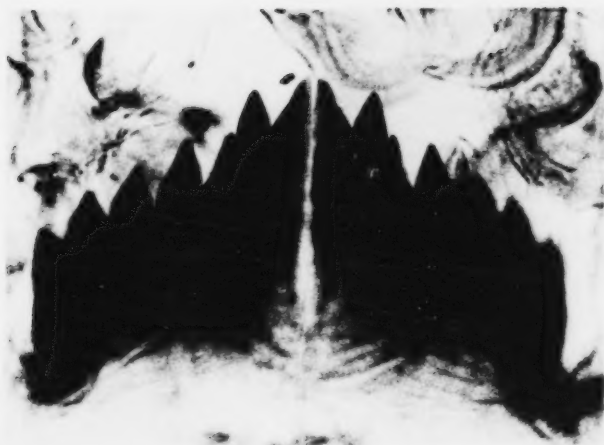
161



162



163



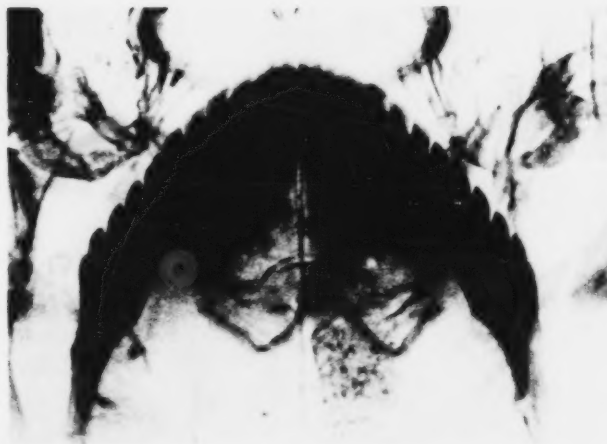
164



165



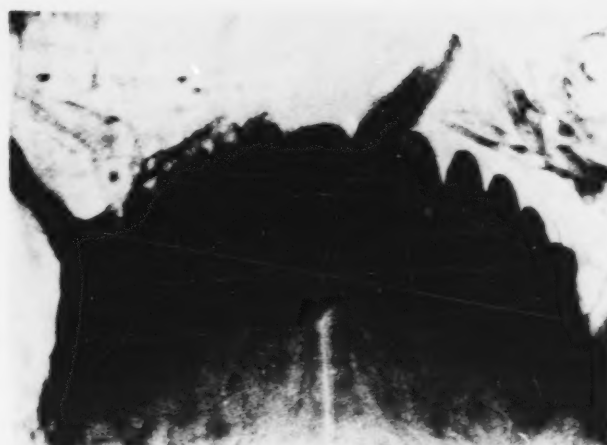
166



167



168



169



170



171



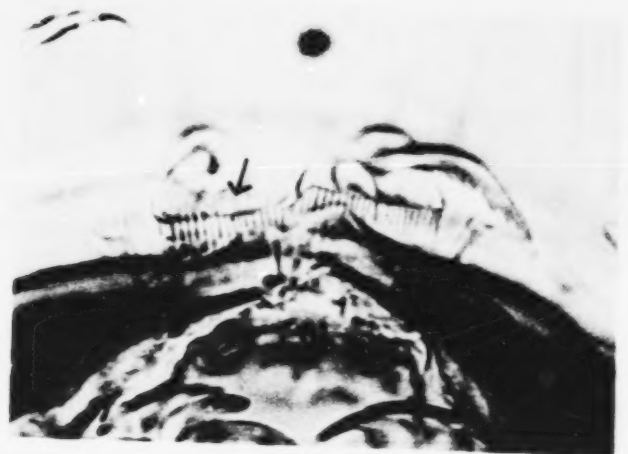
172



173



174



175



176



177



178



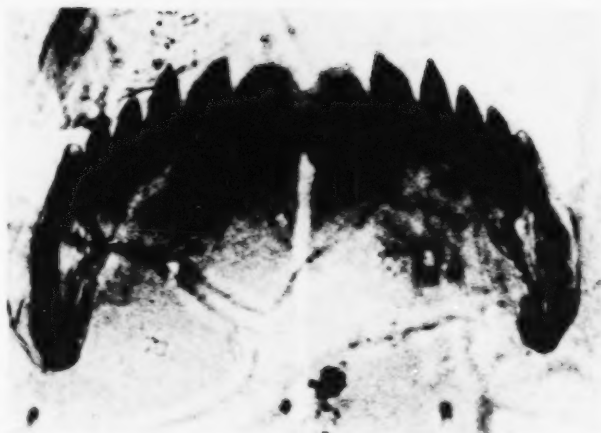
179



180



181



182



183



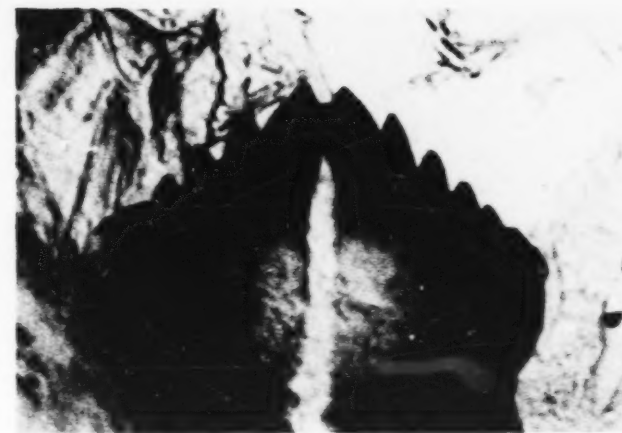
184



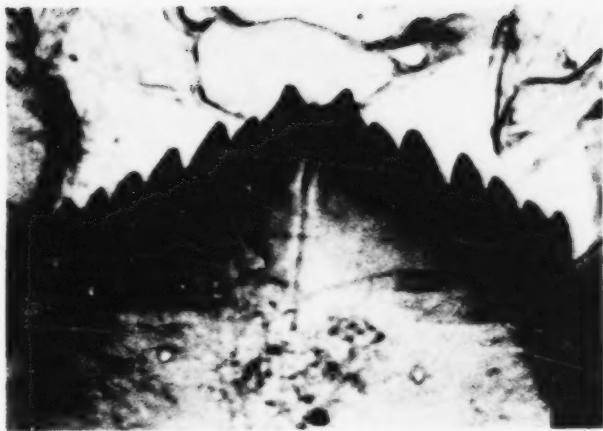
185



186



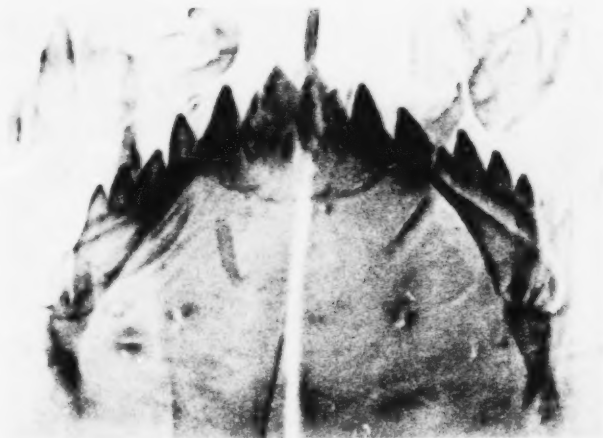
187



188



189



190



191



192



193



194



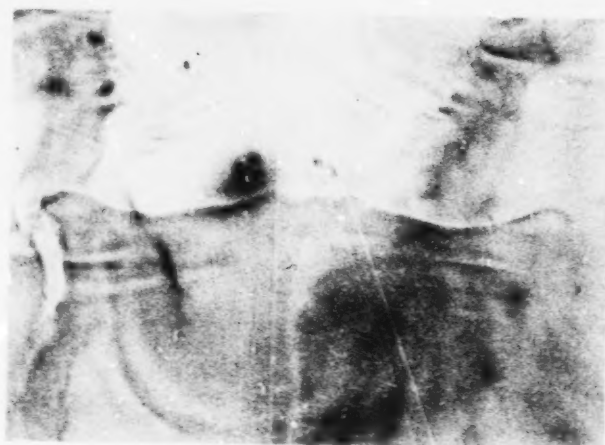
195



196



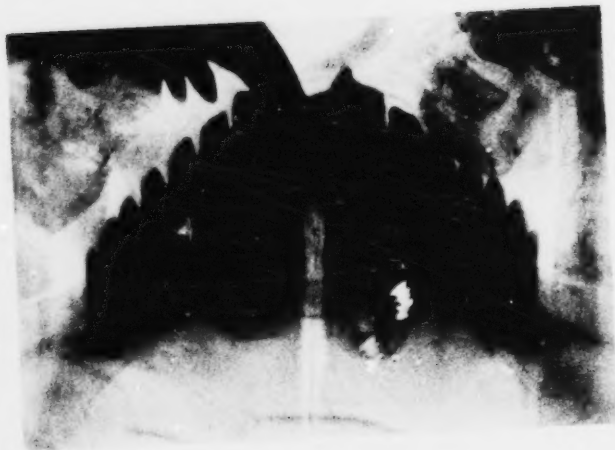
197



198



199



200



201



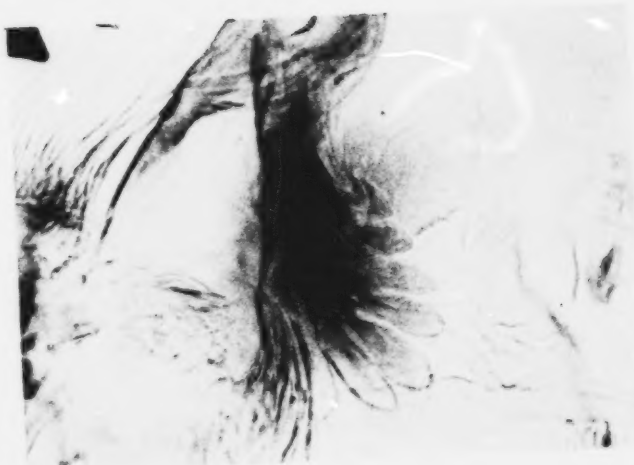
202



203



204



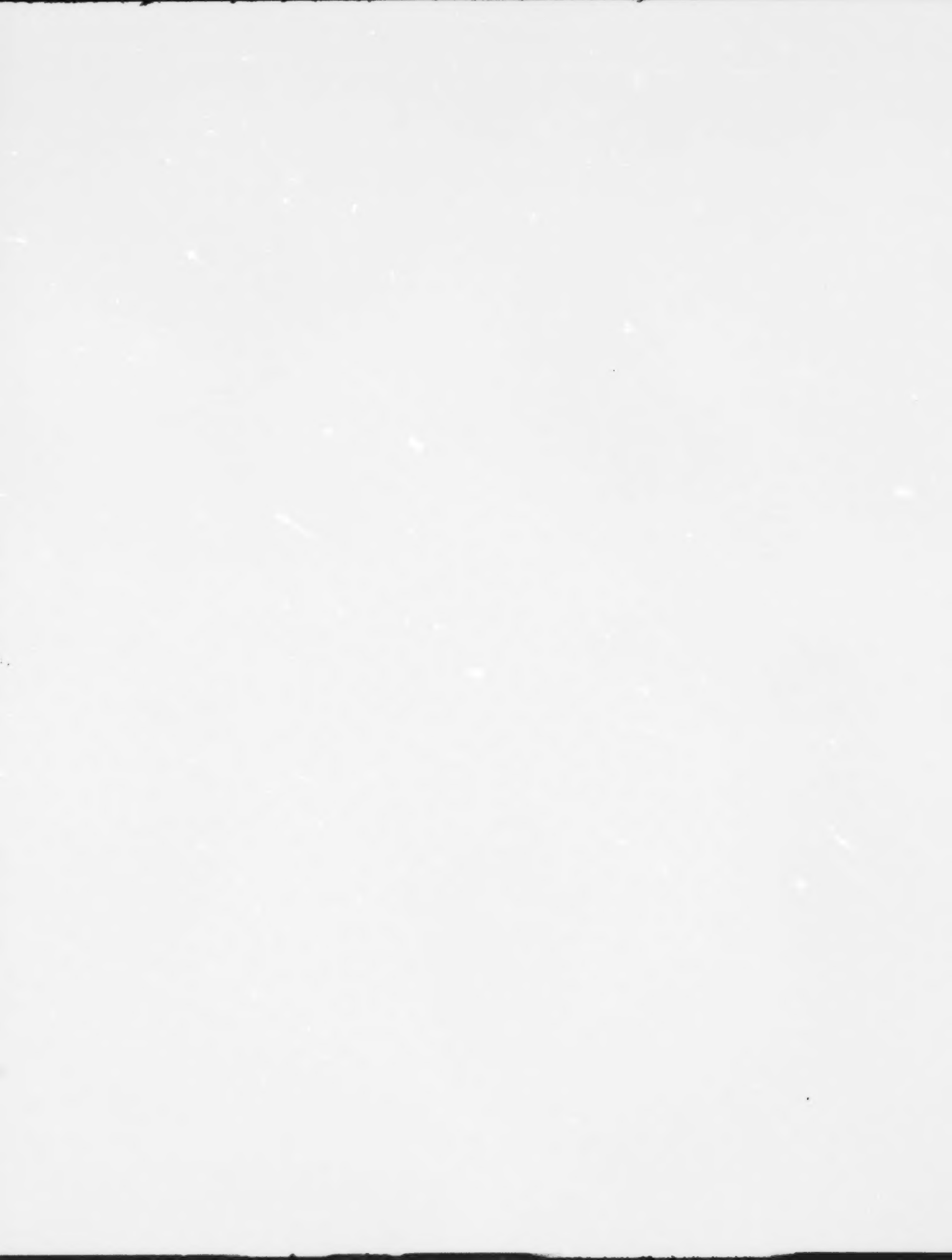
205



206



207



APPENDIX 1: NOTES ON SOME SPECIES IN THIS REPORT

TANYPODINAE

Tanypodini

Tanypus sp. 1

This larva would key to *Tanypus stellatus* Coquillett in Roback (1969) except that the shape of the smallest claw of the posterior proleg differs. It is not pectinate but has only a single hooked apical spine. The distolateral lobe on the sixth segment apparently is absent also.

Macropelopiini

Derotanypus alaskensis (Malloch)

A description of the larva of this genus is in preparation.

Procladius spp.

Larvae of this genus, representing several species, were collected in the northern Yukon, Mackenzie Delta, and Ft. Simpson areas. Identification of larvae to species is not possible at present. Adults of *Procladius* (*Psilotanypus*) *bellus* (Loew) and *Procladius* (*Procladius*) *subletti* Roback were collected (by D. R. Oliver) and Wiens et al (1975) lists *Procladius* (*Procladius*) *culiciformis*.

Pentaneurini

Ablabesmyia illinoensis (Malloch)

Larva keyed in Roback (1957) as *Pentaneura illinoensis*.

Ablabesmyia sp. 2

This larva has a 5-segmented maxillary palpus and is similar to that of *Ablabesmyia mallochi* (Walley) (Beck and Beck 1966), however, a reared, associated adult male differs.

Guttipeloplia guttipennis (v.d. Wulp)

Larva keyed in Chernovskii (1949) as *Ablabesmyia guttipennis*.

Larsia sp. 1

Reared male associated with this larva suggests it maybe a new species.

Labrundinia sp. 1

Larva similar to that of *Labrundinia pilosella* (Loew) described by Roback (1962) as *Pentaneura pilosella* but entire head capsule nodulate as in *Labrundinia floridana*, described by Beck and Beck (1966) from Florida.

Natarbia baltimoreus (Macquart)

Larva described by Johannsen (1937) and by Roback (1957) as *Anatopynia* (*Macropeloplia*) *fastuosa*.

Milotanypus fimbriatus (Walker)

Larva of this species is undescribed.

Paramerina fragilis (Walley)

Larva of this species is undescribed.

Thienemannimyia-group spp.

Identification of larvae to genus in this group is not possible at present. Males of *Conchapelopia pilicaudata* (Walley) and *Conchapelopia telma* Roback have been reared from the Fort Simpson area. Males of *Conchapelopia bruna* Roback have been reared from the northern Yukon.

PODONOMINAE

Boreochlini

Lasiodiamesa brusti Saether

Larva described by Saether (1969).

Trichotanypus posticalis (Lundbeck)

Larva described by Thienemann (1937).

CHIRONOMINAE

Chironomini

Acalcarella sp. 1

This larva is similar to that of *Acalcarella nucus* (Pankratova) (Lenz 1954-62; Saether 1977) except the premandible has two long apical teeth not one long tooth and several shorter teeth.

Chironomus spp.

Species identification of larvae in the genus *Chironomus* is very difficult at present. Separation of larvae of *Chironomus* (*Chironomus*) into groups (Lenz 1954-62) is useful:

Chironomus (*Chironomus*); *anthracinus*-group: Several species appear to exist in this group.

Chironomus (*Chironomus*); *plumosus*-group: The common larva in this group is more like the larva described as *Chironomus hyperboreus* by Rempel (1936) than that of *Chironomus plumosus*. The third inner tooth of the mandible is infuscate but not as black as in *Chironomus plumosus*.

Chironomus (*Chironomus*); *salinarius*-group: *Chironomus* sp. 2 is similar to the larva of *Chironomus hyperboreus* described by Anderson (1937) not Rempel (1936) and of *Chironomus cucini* described by Webb (1969). In *Chironomus* sp. 4 the anterior margin of the paralabial plates are crenulated which is usually a characteristic of the *staegeri*-group.

Chironomus (*Chironomus*); *thummi* (= *riparius*)-group: Several species appear to exist in this group.

Chironomus (*Chaetolabis*) sp. 5: A mature male pupa has been associated with this larva. Appendage 1 of the hypopygium of the pharate adult resembles that of *Chironomus* (*Chaetolabis*) *ochreatus* (Townes). However, this identification is uncertain. The larva of *C. ochreatus* is undescribed.

Cryptochironomus digitatus (Malloch)

Larva described by Curry (1958).

Cryptotendipes sp. 1

The *Leptochironomus* reported in Wiens et al (1975) is probably an early instar of this species.

Cryptotendipes sp. 2

This larva is similar to that of *Cryptotendipes casuarius* (Townes) described by Beck and Beck (1969). However, their description is too brief for detailed comparison.

Dicrotendipes nervosus (Staeger)

The larva of this species has not been adequately described. However, characteristics for distinguishing it from the larvae of other species of *Dicrotendipes* are given in keys by Roback (1957) as *Tendipes* (*Limnochironomus*) *nervosus* and by Webb (1972) as *Chironomus* (*Dicrotendipes*) *nervosus*.

Dicrotendipes sp. 1

In the structure of the hypostomial plate this larva is intermediate between that of *Dicrotendipes modestus* (Say) and *Dicrotendipes neomodeetus* (Malloch) (see keys in Webb 1972). Also the gular region and the frontoclypeal apotome is pale not brownish.

Einfeldia synchrona Oliver

Larva described by Oliver (1971).

Endochironomus sp. 1

This larva is very similar to that of *Endochironomus subtendens* Townes (see Malloch 1915, as *Chironomus viridis* Macquart). It differs from reared specimens of *Endochironomus subtendens* in the Canadian National Collection, Ottawa by:
(1) having a broader premandible, and (2) the teeth on the pecten epipharyngis are pointed not globular to tear-drop in shape. Also, the median striae on the paralaial plate are less widely spaced than in *Endochironomus subtendens*.

Glyptotendipes (*Glyptotendipes*) *dreisbachi* Townes

Larva described by Berg (1950).

Glyptotendipes (*Phytotendipes*) sp. 3

This larva is similar to that of *Glyptotendipes* (*Phytotendipes*) *lobiferus* (Say) described by Johannsen (1937) as *Chironomus* (*Glyptotendipes*)

lobiferus, and by Berg (1950), except the outer lateral tooth of the hypostomial plate is strongly out-curved.

Harmischia curtilamellata (Malloch)

Larva described by Saether (1977).

Lauterborniella agrayloides (Kieffer)

Larva described by Bause (1914) as *Tanytarsus agrayloides* and keyed in Roback (1957).

Microtendipes pedellus (De Geer)

Larva described by Johannsen (1938) as *Chironomus* (*Microtendipes*) *aberrans* and *Chironomus* (*Microtendipes*) *pedellus*, and keyed in Roback (1957).

Pagastiella ostansa Webb

Larva described by Webb (1969).

Paralauterborniella nigrohalteralis (Malloch)

Larva described by Beck and Beck (1970).

Paratendipes sp. 1

This larva is similar to that of *Paratendipes albimanus* (Meigen) described by Johannsen (1938), as *Chironomus* (*Paratendipes*) *albimanus* except for the four light colored median teeth of the hypostomial plate are longer than the first lateral teeth. The head capsule is yellowish as in *P. albimanus*.

Polypedium (*Polypedium*) *illinoense* (Malloch)

Larva described by Hauber (1947) and by Berg (1950).

Polypedium (*Polypedium*) *laetum* (Meigen)

Larva keyed in Bryce (1960).

Polypedium (*Polypedium*) *nubeculosum* (Meigen)

Larva keyed in Chernovskii (1949).

Polypedium (*Polypedium*) *ophioides* (Townes)

This larva was identified by Dr. D. Maschwitz who will describe it in a forthcoming revision of the subgenus *Polypedium* (*Polypedium*).

Polypedium (*Tripodura*) sp. 1

This may be the larva of *Polypedium* (*Tripodura*) *similans* Townes as it agrees closely in structure with reared specimens from other localities. However, it is difficult to distinguish it from larvae of the closely related species, *Polypedium* (*Tripodura*) *halterale* (Coquillett).

Robackia demijerei (Kruseman)

Larva described by Saether (1977).

Saetheria tylus (Townes)

Larva described by Jackson (1977).

Xenochironomus sp. 1

The hypostomial plate of this larva resembles that of a "juvenile" larva of *Xenochironomus* (*Anceus*) *festivus* (Say) described by Roback (1963).

*Pseudochironomini**Pseudochironomus fulviventris* (Johannsen)

Larva described by Saether (1977).

ORTHOCLADIINAE

Brillia sp. 1

This larva keys to *Brillia flavifrons*? Johannsen in Roback (1957).

Corynoneura

Four, possibly five, species of *Corynoneura* were collected in the Mackenzie and Porcupine River watersheds. *Corynoneura* sp. 1 and *Corynoneura* sp. 2 differ only in color of antennal segments (see key). These larvae will key to *Corynoneura taris* Roback in Roback (1957). However, an adult male associated with the larva of *Corynoneura* sp. 1 differs from that of *C. taris*. It is similar to *Corynoneura celtica* Edwards (Schlee 1968). A third larval type, *Corynoneura* sp. 3, (not in key) has dark antennae with the third segment only slightly darker than the other antennal segments. An adult male associated with it does not appear to differ from that associated with the larva of *Corynoneura* sp. 1. It is possible that all three larval types belong to the same species.

Corynoneura sp. 4 is possibly the larva of *Corynoneura celeripes* (Winnertz) (see keys in Roback 1957; Thienemann 1944). *Corynoneura* sp. 5 is distinctive; the antennal length is shorter than the head length. Here, it is placed in *Corynoneura* rather than in *Thienemanniella* because its antenna has four segments and a plumose seta is present on the posterior proleg.

Cricotopus

Larvae of over 20 species were collected. These are keyed to groups, according to the classification of Hirvenoja (1973), except those of the *bicinctus*-group which are keyed to species. Undoubtedly many more species of this species-rich genus occur in the Canadian northwest and the key presented here is intended only as an introduction. Hirvenoja (1973) should be used to identify larvae.

Larvae of some species in the subgenus *Cricotopus* (*Cricotopus*), without plumose setae on body segments, cannot be distinguished from larvae of the subgenus *Orthocladius* (*Orthocladius*). Larvae of these two subgenera are brought out together in the key and representative photos of the various types of hypostomial plates are included (Figs. 169-174).

Cricotopus (*Cricotopus*) *bicinctus* (Meigen) - Larva described by Hirvenoja (1973).

Cricotopus (*Cricotopus*) *mackenziensis* Oliver - Larva described by Oliver (1977).

Diplocladius cultriger (Kieffer)

Larva described by Johannsen (1937) as *Spaniotoma* (*Diplocladius*) *cultriger*.

Epoicocladius flavens (Malloch)

Larva described by Šulc and Zavřel (1924) as *Hydrobaenus* (*Smittia*) *ephemeræ* (Kieffer) and by Roback (1953).

Eukiefferiella claripennis (Lundbeck)

The larva is undescribed. It has a four-segmented antenna so it appears that the placement of *Eukiefferiella hospita* Edwards as a synonym of *Eukiefferiella claripennis* by Lehmann (1972) is incorrect. The larva of *Eukiefferiella hospita* has a five-segmented antenna.

Eukiefferiella paucunca Saether

Larva described by Saether (1969).

Eurynemus sp. 1

A description of the larva of this genus is in preparation.

Heterotrissocladius changi Saether

Larva described by Saether (1975a).

Krenosmittia sp. 1

This larva is similar, especially in the structure of the hypostomial plate, to that of *Krenosmittia camptophleps* (Edwards) (see Thienemann and Kruger 1939, as *Krenosmittia gynocera*). However, the premandible has one short and two long teeth not four short teeth as is described for *Krenosmittia camptophleps*.

Nanocladius (*Nanocladius*) sp. 1

This larva keys to *Nanocladius rectinervis* (Kieffer), as does an associated reared male, in Saether (1977). However, the pupal exuvium keys to *Nanocladius crassicornus* Saether.

Orthocladius (*Pogonocladius*) sp. 1

This larva is similar to the larva of *Orthocladius* (*Pogonocladius*) *consobrinus* (Holmgren) associated with reared adult males of this species obtained in other northern localities. The color of the larval head capsule is light yellowish-brown, not dark brown, as in *O. consobrinus*. Also, the second lateral tooth of the hypostomial plate is smaller than either the first or third lateral teeth whereas in *O. consobrinus* the third lateral tooth is smaller than the second.

Parametriognemus graminicola (Lundbeck)

Larva described by Saether (1969) as *Parametriocnemus* sp. B.

Psectrocladius

Psectrocladius sp. 1 belongs to the *dilatus*-group. *Psectrocladius simulans* (Johannsen), *Psectrocladius* sp. 3, and *Psectrocladius* sp. 4 all belong to the *psilopterus*-group (Thienemann 1944). Larvae of *Psectrocladius* sp. 1, *P.* sp. 3 and *P.* sp. 4 are variable and it is possible that each represent several species.

Psectrocladius simulans Johannsen: Larva described by Johannsen (1937, as *Spaniotoma* (*Psectrocladius*) *simulans*), Roback (1957) and Saether (1969).

Rheocricotopus

The larva of both *Rheocricotopus* sp. 1 and *Rheocricotopus* sp. 2 belong to the *effusus*-group of *Rheocricotopus* (Thienemann 1944).

Symbiocladius equitans (Claassen)

Larva described by Johannsen (1937).

Zalutschia zalutschicola Lipina

Larva described by Saether (1976).

DIAMESINAE

Diamesini

Potthastia longimanus Kieffer

Larva described by Pankratova (1970).

Potthastia sp. 3

This larva is of the *Potthastia gaedii* type (Pagast 1933).

Protanypodini

Protanypus sp. 1

This larva keys to *Protanypus* sp. prob. *caudatus* Edwards in Saether (1975b).

PRODIAMESINAE

Monodiamesa bathyphila Kieffer

This larva is smaller than that described by Saether (1973). In size and width of paralabial plates it is like his *Monodiamesa* sp., otherwise, it agrees with his description of *Monodiamesa bathyphila*.

APPENDIX II: COMPARISON OF NAMES USED BY WIENS ET AL (1975) WITH THOSE
IN PRESENT WORK

Wiens et al (1975)

Present work

Subfamily Tanypodinae

Tribe Tanypodini

Tanypus

Tanypus sp. 1

Tribe Macropelopiini

Psectrotanypus

Procladius - including *P.*
culiciformis and *P. subletti*

Derotanypus alaskensis (Malloch)
Procladius spp.

Tribe Pentaneurini

Ablabesmyia

Conchapelopia sp.

Not recorded

Labrundinia

Natarsia

Nilotanypus

Not recorded

Tanypodinae Genus A

Tanypodinae Genus B

Tanypodinae Genus D

Tanypodinae Genus E grp.

Ablabesmyia illinoensis (Malloch)

Ablabesmyia sp. 1

Ablabesmyia sp. 2

Thienemannimyia-group

Guttipelopis guttipennis Fittkau

Labrundinia sp. 1

Natarsia baltimorensis (Macquart)

Nilotanypus fimbriatus (Walker)

Paramerina fragilis (Walley)

Not keyed

Larsia sp. 1

Thienemannimyia-group

Thienemannimyia-group

Subfamily Podonominae

Tribe Boreochlini

Lasiodiamesa sp. MK1

Trichotanypus sp.

Trichotanypus sp. MK1

Trichotanypus sp. MK2

Lasiodiamesa brusti Saether

Not keyed

Trichotanypus sp. 1

Trichotanypus posticalis (Lundbeck)

Subfamily Chironominae

Tribe Chironomini

Acalcarella sp. MK1

Chironomus sp. MK1

Acalcarella sp. 1

Chironomus (*Chironomus*); *anthracinus*-
group

Chironomus sp. MK2

Chironomus sp. MK3

Chironomus sp. MK4

Not recorded

Cryptochironomus cf. *demeijera*

Cryptochironomus sp. MK1

Cryptochironomus grp. MK1

Cryptochironomus grp. MK2

Cryptocladopelma sp. MK1

Cryptotendipes sp. MK1

Demicryptochironomus sp. MK1

Demicryptochironomus sp. MK2

Dicrotendipes sp. MK1

Einfeldia sp. MK1

Einfeldia or *Chironomus*

Endochironomus sp. MK1

Endochironomus sp. MK2

Glyptotendipes sp. MK1

Glyptotendipes sp. MK2

Harnischia

Harnischia sp. MK1

Lauterborniella sp. MK1

Lauterborniella agrayloides

Leptochironomus

Microtendipes sp. MK1

Nilothauma sp. MK1

Nilothauma sp. MK2

Pagastiella sp. MK1

Parachironomus sp. MK1

Paracladopelma sp. MK1

Paracladopelma sp. MK2

Paralauterborniella sp. MK1

Paratendipes sp. MK1

Paratendipes sp. MK2

Phaenopsectra (*Sergentia*)

coracina

Phaenopsectra sp. MK1

Phaenopsectra sp. MK3

Phaenopsectra or *Endochironomus*

Polypedilum (*Tripodura*)

Polypedilum sp. MK1

Polypedilum sp. MK2

Chironomus (*Chironomus*); *thummi*
(= *riparius*)-group

Chironomus (*Chironomus*) sp. 2;

salinarius-group

Chironomus (*Chironomus*); *plumosus*-group

Chironomus (*Chironomus*) sp. 4;

salinarius-group

Chironomus (*Chaetolabis*) sp. 5

Robackia demeijerei (Krusemann)

Cryptochironomus digitatus (Malloch)

Saetheria tylus (Townes)

Not keyed - probably first or
second instar of a species of

Polypedilum

Cladopelma sp. 1

Cryptotendipes sp. 1

Cryptotendipes sp. 2

Demicryptochironomus sp. 1

Paralauterborniella nigrohalteralis
(Malloch)

Dicrotendipes nervosus (Staeger)

Dicrotendipes sp. 1

Einfeldia synchrona Oliver

Einfeldia sp. 2

Einfeldia sp. 3

Endochironomus sp. 1

Phaenopsectra sp. 2

Glyptotendipes (*Phytotendipes*) sp. 3

Glyptotendipes (*Glyptotendipes*)
dreisbachi Townes

Not keyed

Harnischia curtilamellata (Malloch)

Lauterborniella agrayloides (Kieffer)

Lauterborniella agrayloides (Kieffer)

Not keyed - maybe an early instar of
Cryptotendipes sp. 1

Microtendipes pedellus (De Geer)

Not keyed

Not keyed

Pagastiella ostansa (Webb)

Parachironomus sp. 1

Paracladopelma sp. 1

Not keyed - early instar

Saetheria tylus (Townes)

Paratendipes sp. 1

Paratendipes sp. 1

? = *Phaenopsectra* sp. 1

Phaenopsectra sp. 1

Not keyed - early instar

Phaenopsectra sp. 2

Polypedilum (*Tripodura*) sp. 1

Polypedilum (*Tripodura*) sp. 1

Not keyed

Polypedilum sp. MK3

Polypedilum sp. MK4

Polypedilum sp. MK5

Polypedilum sp. MK6

Stenochironomus sp. MK1

Stictochironomus sp. MK1

Stictochironomus sp. MK2

Not recorded

Xenochironomus sp. MK1

Xenochironomus sp. MK2

Chironomini genus A-MK1 to C-MK1

Polypedilum (*Polypedilum*)
laetum (Meigen)

Polypedilum (*Polypedilum*)
ophioides (Townes)

Polypedilum (*Polypedilum*)
nubeculosum (Meigen)

Polypedilum (*Polypedilum*)
illinoense (Malloch)

Not keyed

Stenochironomus sp. 1

Stictochironomus spp.

Not keyed - early instar

Stictochironomus sp. 3

Xenochironomus sp. 1

Not keyed

Not keyed

Tribe Pseudochironomini

Pseudochironomus sp. MK1

Pseudochironomus fulviventris
(Johannsen)

Tribe Tanytarsini

Cladotanytarsus sp. MK1

Cladotanytarsus sp. MK2

Cladotanytarsus sp. MK3

Constempellina sp. MK1

Constempellina sp. MK2

Constempellina sp. MK3

Corynocera sp. MK1

Corynocera n. sp.

Micropsectra sp. MK1

Micropsectra sp. MK2

Micropsectra sp. MK3

Paratanytarsus sp. MK1

Rheotanytarsus sp. MK1

Rheotanytarsus sp. MK3

Stempellina sp. MK1

Stempellina sp. MK2

Stempellina sp. MK3

Stempellina sp. MK4

Stempellina sp. MK5

Stempellinella sp. MK1

Tanytarsus ss.

Tanytarsus sp. MK1

Tanytarsus sp. MK2

Tanytarsus sp. MK3

Tanytarsus sp. MK4

Cladotanytarsus sp. 1

Cladotanytarsus sp. 2

Cladotanytarsus sp. 3

Constempellina sp. 1

Constempellina sp. 2

Not keyed

Corynocera sp. 1

Adult record $\therefore$ not keyed

Micropsectra sp. 1

Micropsectra sp. 2

Micropsectra sp. 3

Paratanytarsus sp. 1

Paratanytarsus sp. 2

Rheotanytarsus sp. 1

Not keyed

Stempellina sp. 1

Stempellina sp. 2

Stempellina sp. 3

Not keyed

Not keyed

Stempellinella sp. 1

Adult record? $\therefore$ not keyed

Tanytarsus sp. 1

Not keyed - early instar

Tanytarsus sp. 3

Tanytarsus sp. 2

Subfamily Orthocladiinae

Brillia sp. MK1
Chaetocladius
Corynoneura sp. MK1
 Not recorded
Corynoneura sp. MK3

Corynoneura sp. MK4
Corynoneura sp. MK5
Cricotopus sp. MK1

Cricotopus sp. MK4

Cricotopus sp. MK6

Cricotopus sp. MK10

Cricotopus sp. MK11

Cricotopus sp. MK15

Cricotopus sp. MK16

Cricotopus sp. MK19

Cricotopus sp. MK22

Cricotopus sp. MK24

Diplocladius sp. MK1
Epoicocladius sp. MK1
Eukiefferiella sp. MK1
Eukiefferiella sp. MK2

Eukiefferiella sp. MK3
Eukiefferiella sp. MK4
Eukiefferiella sp. MK5
Eukiefferiella sp. MK6
Eukiefferiella sp. MK7
Eukiefferiella sp. MK8
Eurycnemus sp. MK1

Gymmetriocnemus sp. MK1
Heterotrissocladius sp. MK1
Krenosmittia sp. MK1
Limmophyes sp. MK1
Limmophyes sp. MKA-1
Metriocnemus sp. MK1
Microcricotopus sp. MK1

Brillia sp. 1

? Not keyed

Corynoneura sp. 1

Corynoneura sp. 2

Corynoneura sp. 3 (not keyed;
 see Appendix I)

Corynoneura sp. 4

Corynoneura sp. 5

Cricotopus (*Cricotopus*)

bicinctus (Meigen)

Cricotopus (*Cricotopus*)

mackenziensis Oliver

Cricotopus (*Isocladius*);

laricomalis-group

Cricotopus (*Cricotopus*);

tremulus-group

Cricotopus (*Cricotopus*);

cylindraceus-group

Cricotopus (*Cricotopus*);

festivellus-group

Cricotopus (*Cricotopus*);

tremulus-group

Cricotopus (*Isocladius*);

sylvestris-group

Cricotopus (*Isocladius*);

laricomalis-group

Cricotopus (*Isocladius*);

laricomalis-group

Cricotopus (*Cricotopus*);

tremulus-group

Diplocladius cultriger (Kieffer)

Epoicocladius flavens (Malloch)

Eukiefferiella sp. 1

Eukiefferiella paucunca Saether

Eukiefferiella sp. 7

Eukiefferiella paucunca Saether

Eukiefferiella sp. 4

Eukiefferiella claripennis (Lundbeck)

Eukiefferiella sp. 6

Eukiefferiella sp. 7

Not keyed

Eurycnemus sp. 1

Not keyed

Heterotrissocladius changi Saether

Krenosmittia sp. 1

Not keyed

Adult record $\therefore$ not keyed

Not keyed

Nanocladius (*Nanocladius*) sp. 1

Orthocladus sp. MK1, sp. MK3,
sp. cf. MK3, sp. MK7,
sp. MK17, sp. MK20

Orthocladus (*Eudactylocladius*)
Orthocladus (*Euorthocladus*)

Orthocladus (*Euorthocladus*) MKA-1
Orthocladus (*Pogonocladus*)
consobrinus
Orthocladus (s.s.)

Orthocladus or *Cricotopus* sp.
MK2, sp. MK5, sp. MK8, sp. MK9,
sp. MK13, sp. MK14, sp. MK21,
sp. MK23

Parakiefferiella sp. MKA-1
Orthocladinae Genus J-MK1
Parametrioctenemus sp. MK1

prob. *Parametrioctenemus* sp. MK1

Paraphaenocladus sp. MK1

Paraphaenocladus sp. MK2

Psectrocladius sp. MKA-1

Psectrocladius sp. MK1

Psectrocladius sp. MK2

Psectrocladius sp. MK5

Psectrocladius sp. MK7

Psectrocladius sp. MK8

Pseudosmittia grp. MK1-MK3

Pseudorthocladus sp. MK1

Rheocricotopus sp. MK1

Rheocricotopus sp. MK2

Not recorded

Not recorded

Synorthocladus sp. MK1

Thienemaniella-*Corynoneura*

Thienemaniella sp. MK1

Thienemaniella sp. MK2

Thienemaniella sp. MK3

Trissocladus (= *Zalutschia*)

zalutschicola (Lip.)

Trissocladus sp. MK1

Trissocladus sp. MK2

Orthocladinae Genus B - Genus Z

(excluding Ge J-MK1 - see

Parakiefferiella sp. 1)

Cricotopus (*Cricotopus*) or
Orthocladus (*Orthocladus*)

Adult record ∴ not keyed

Orthocladus (*Euorthocladus*) sp. 1

Orthocladus (*Euorthocladus*) sp. 2

Adult record ∴ not keyed

Orthocladus (*Pogonocladus*) sp. 1

Cricotopus (*Cricotopus*) or
Orthocladus (*Orthocladus*)

Cricotopus (*Cricotopus*) or
Orthocladus (*Orthocladus*)

Adult record ∴ not keyed

Parakiefferiella sp. 1

Parametrioctenemus *graminicola*
(Lundbeck)

? Not keyed

Paraphaenocladus sp. 1

Paraphaenocladus sp. 2

Adult record ∴ not keyed

Psectrocladius sp. 1

Psectrocladius *simulans* (Johannsen)

Psectrocladius sp. 4

Psectrocladius sp. 3

Psectrocladius sp. 1

Pseudosmittia-group

Not keyed

Rheocricotopus sp. 1

Rheocricotopus sp. 2

Smittia-group

Symbiocladus *equitans* (Claassen)

Synorthocladus sp. 1

? Not keyed

Thienemaniella sp. 1

Thienemaniella sp. 2

Thienemaniella sp. 3

Zalutschia *zalutschicola* Lipina

Zalutschia sp. 1

Hydrobaenus sp. 1

? Not keyed

Subfamily Diamesinae

Tribe Diamesini

Diamesa sp. MK1*Diamesa* sp. MK2*Diamesa* sp. MK3

Not recorded

Pagastia sp. MK1*Potthastia* sp. MK1*Potthastia* sp. MK2*Potthastia* sp. MK3*Diamesa* sp. 1*Diamesa* sp. 2*Diamesa* sp. 3*Diamesa* sp. 4

Not keyed

Potthastia longimanus Kieffer

Not keyed - early instar?

Potthastia sp. 3

Tribe Protanypodini

Protanypus sp. MK1

Diamesinae Genus A-MK1 to C-MK1

Protanypus sp. 1

Not keyed

Subfamily Prodiamesinae

Prodiamesa sp. MK1*Monodiamesa bathyphila* Kieffer

Printed in Canada by
Supply and Services Canada
Printing & Publishing
for exclusive distribution by
Environment Canada
Fisheries and Marine Service
Freshwater Institute
Winnipeg, Manitoba
Canada